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FIG.1

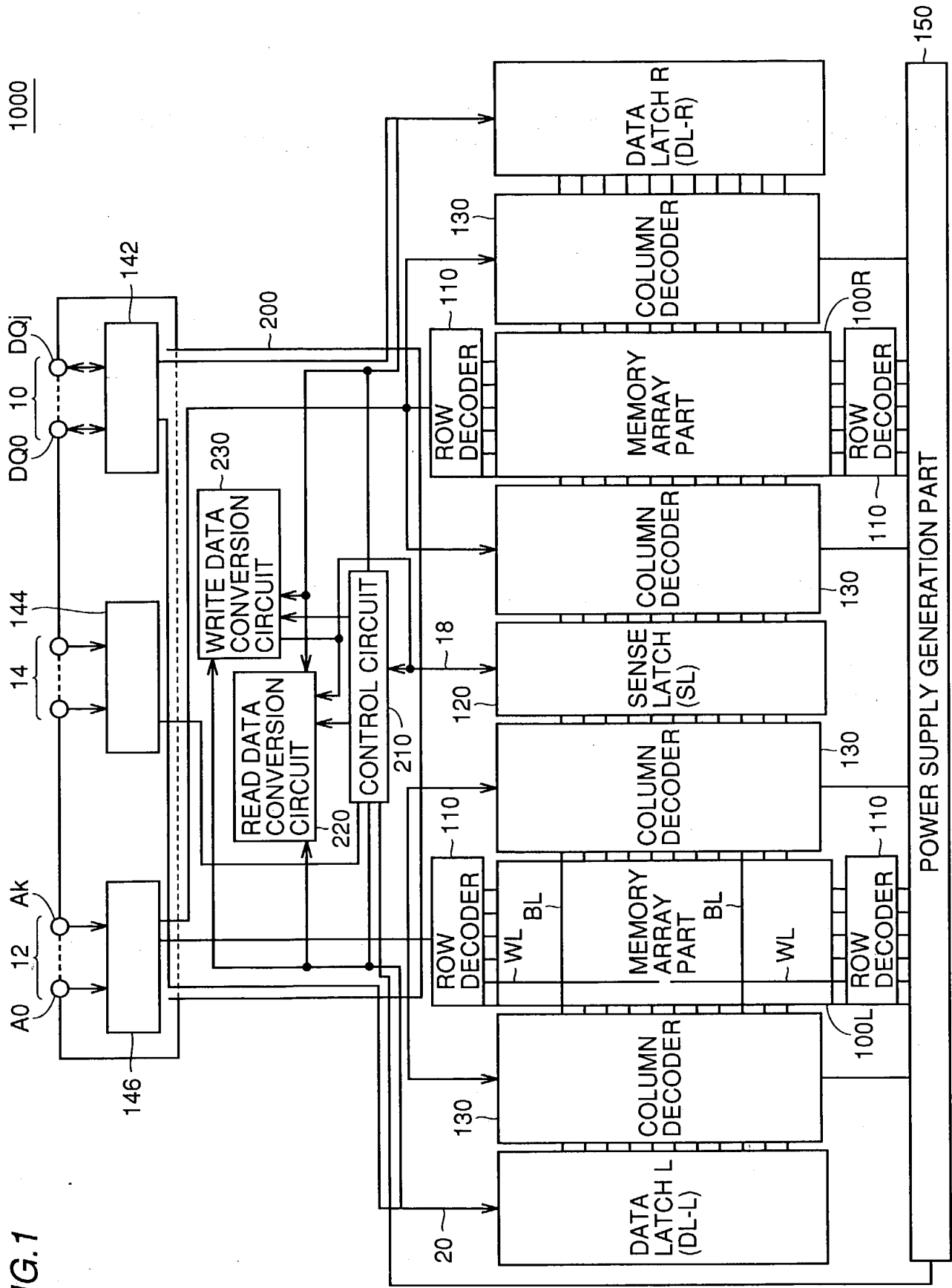


FIG.2

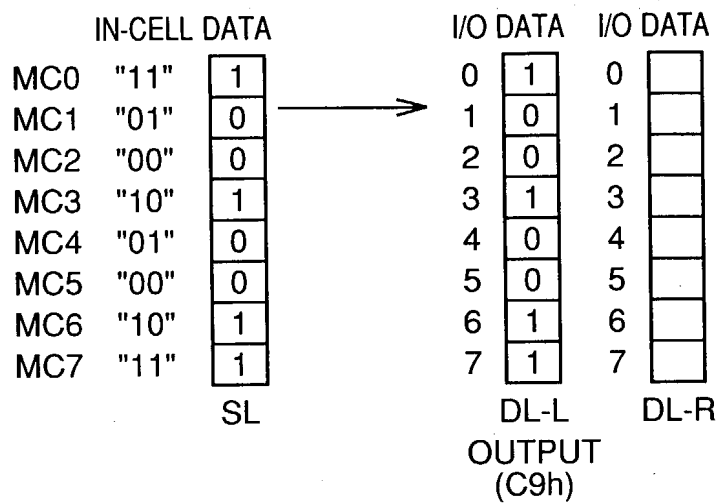


FIG.3

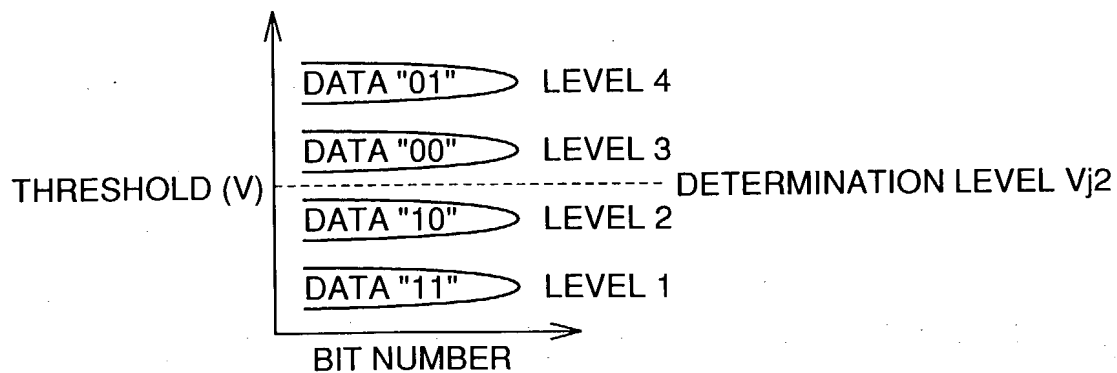


FIG.4

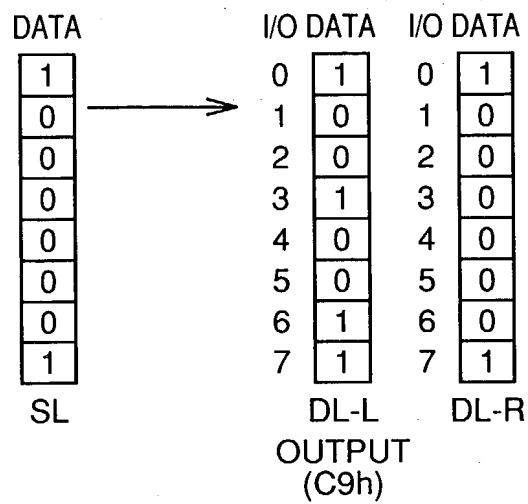


FIG.5

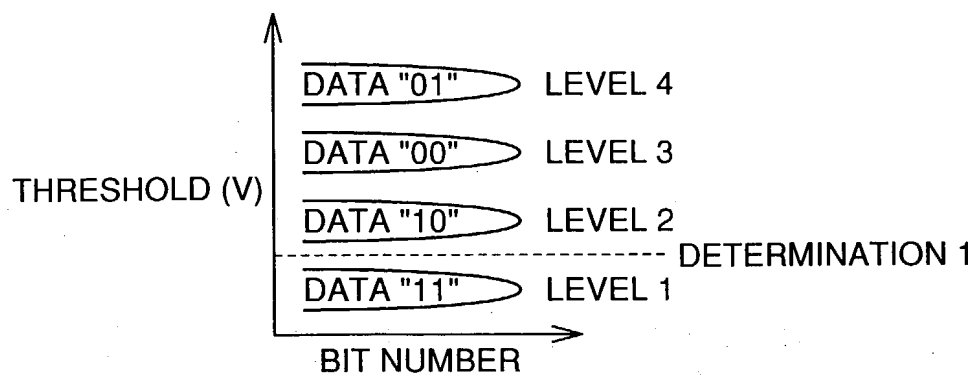


FIG.6

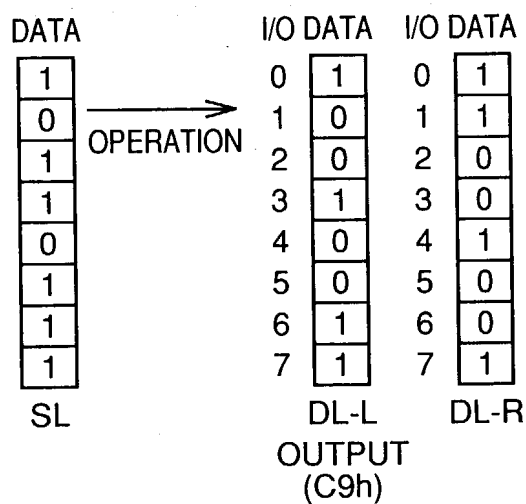


FIG.7

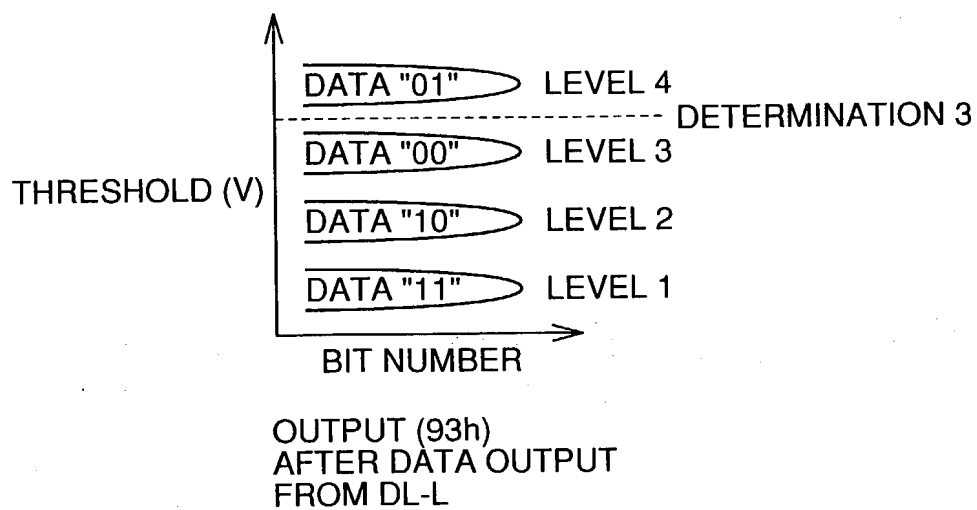
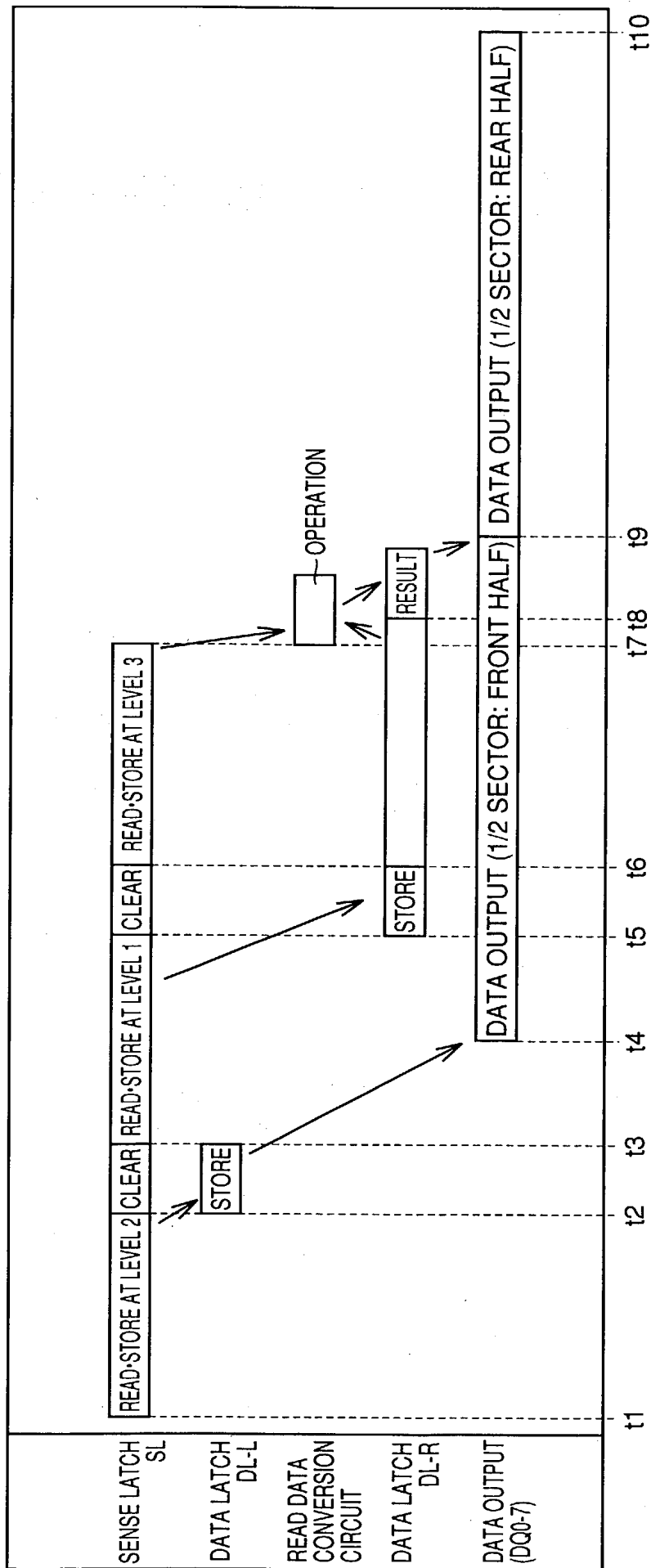
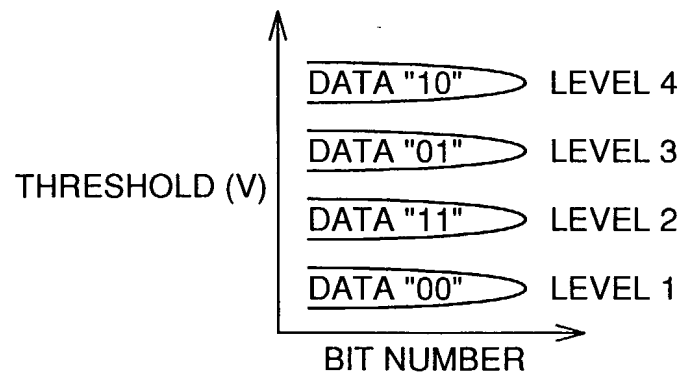


FIG. 8





**FIG.9**



**FIG.10**

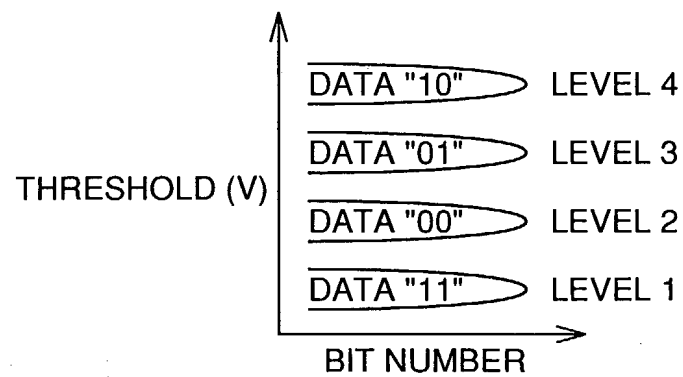


FIG.11

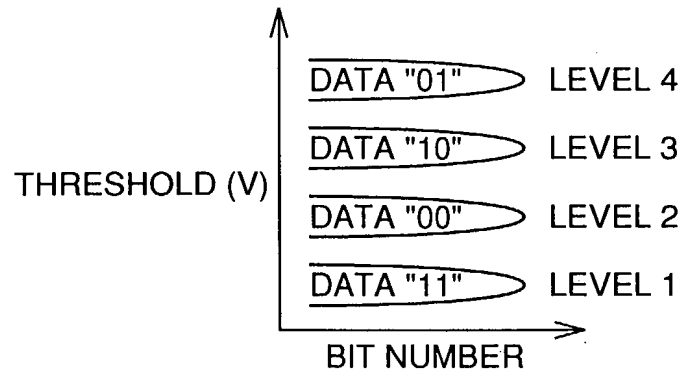


FIG.12

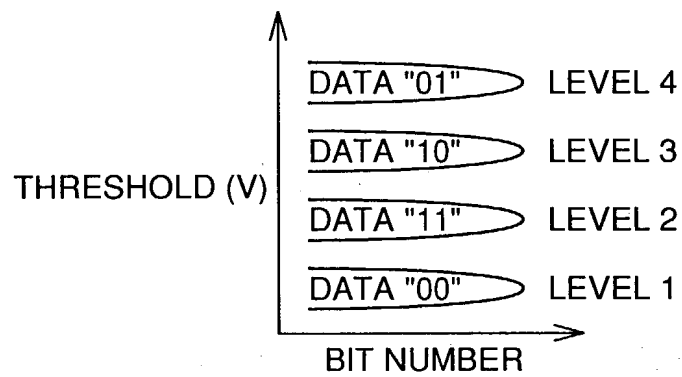




FIG.13

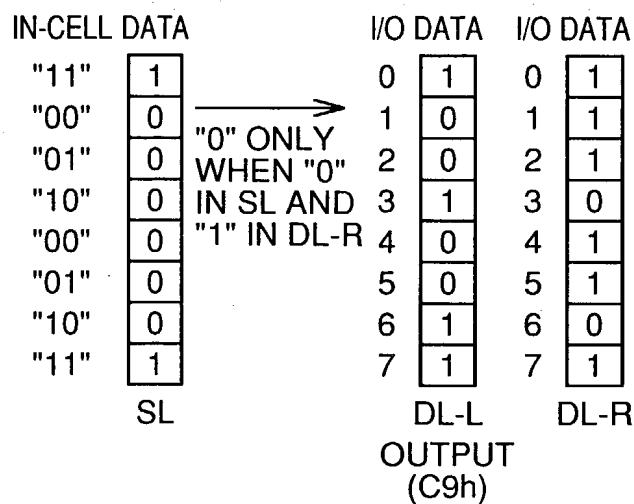


FIG.14

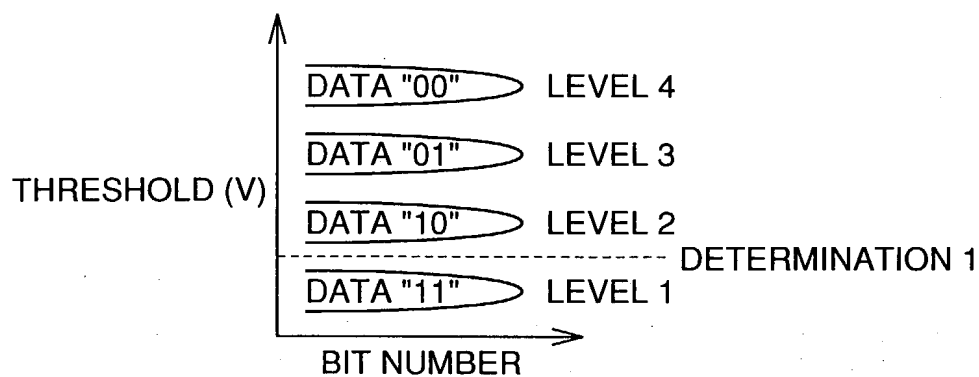


FIG.15

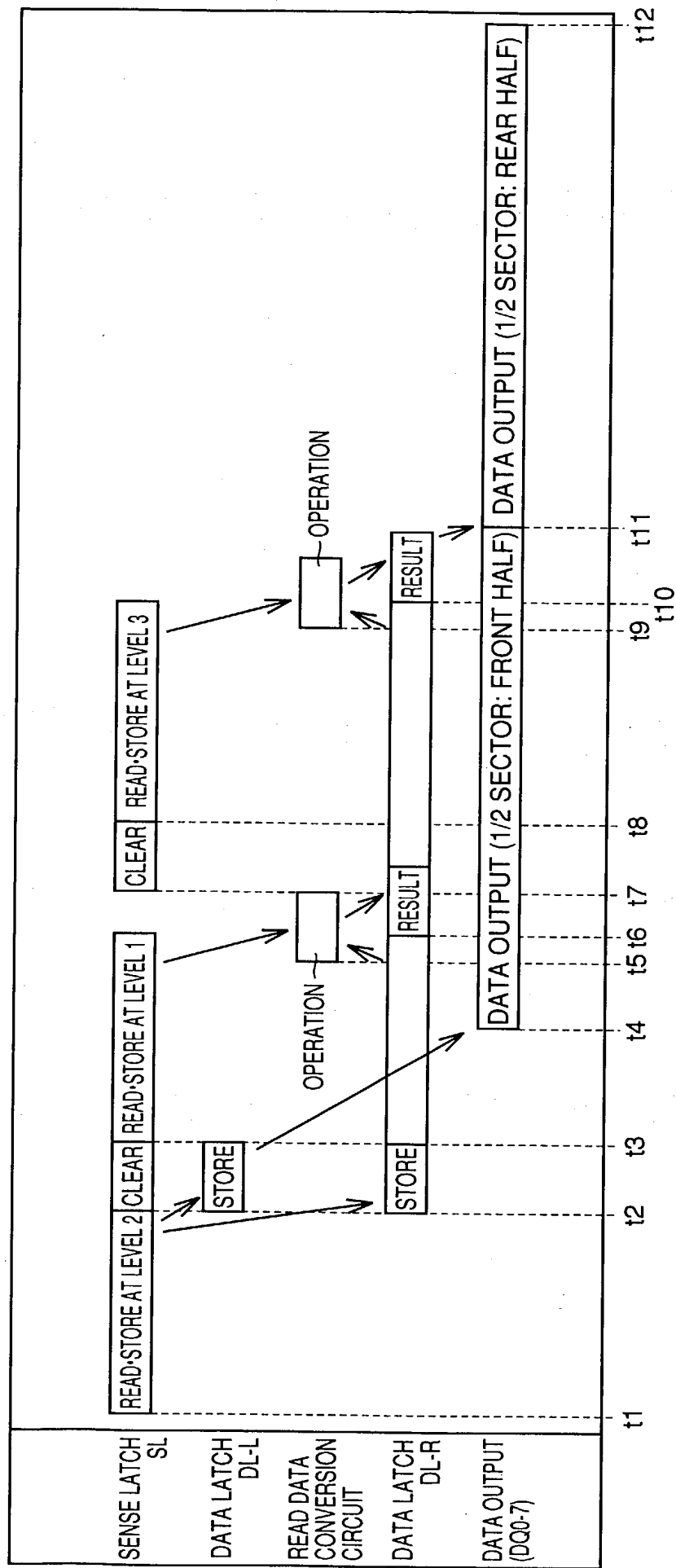


FIG. 16A

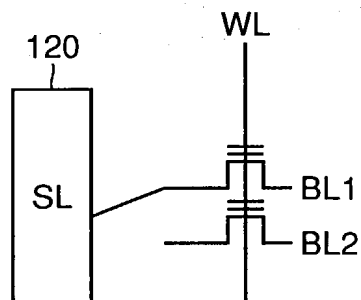


FIG. 16B

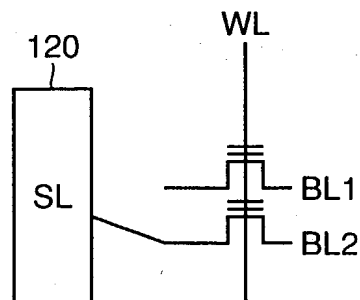


FIG. 17

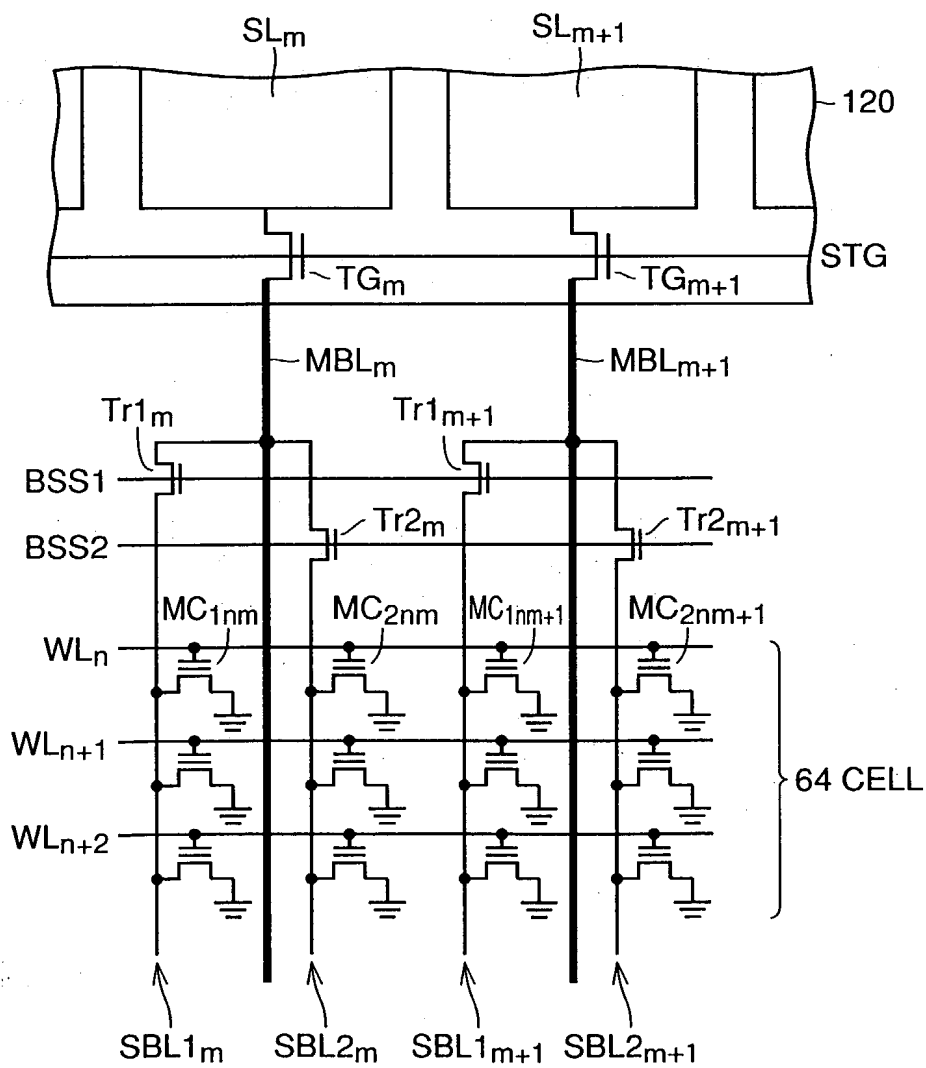


FIG. 18

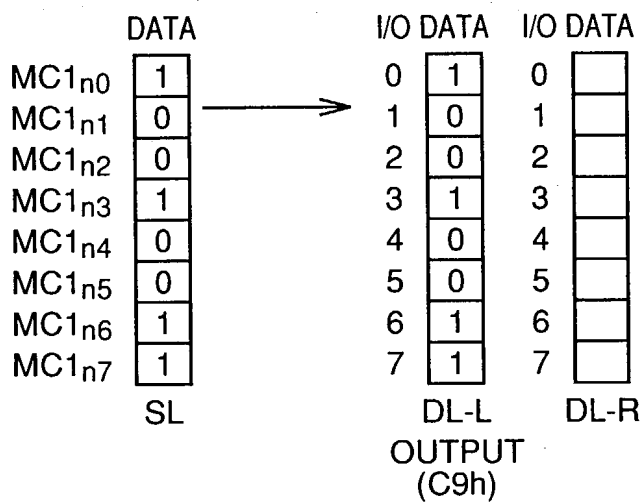


FIG. 19

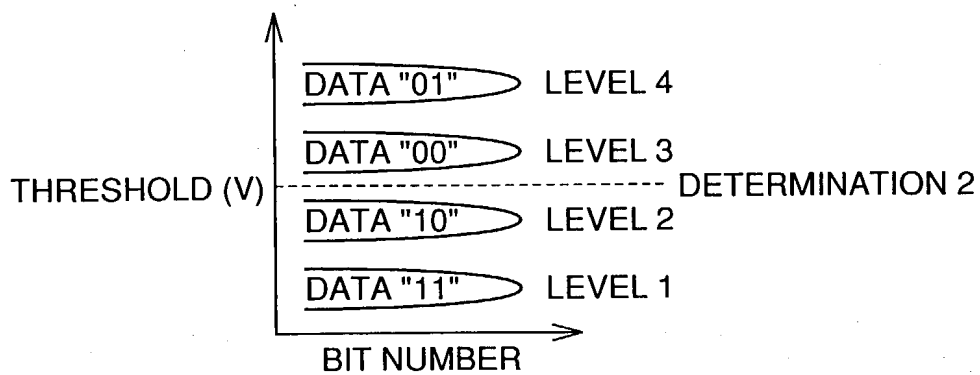


FIG.20

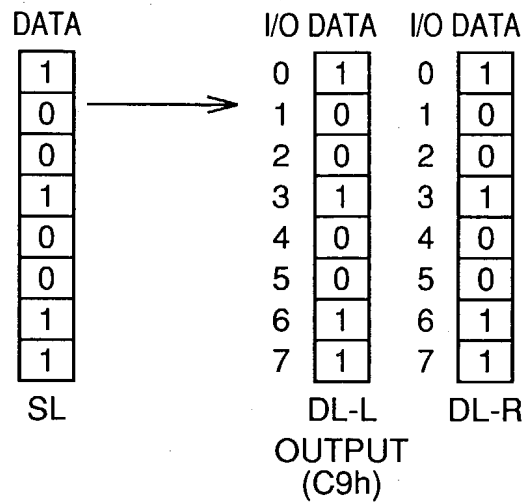


FIG.21

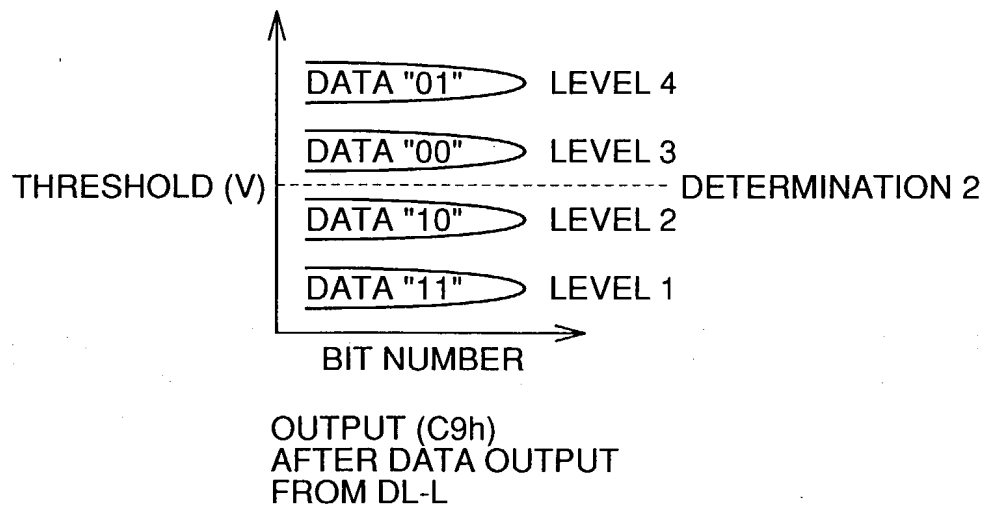


FIG.22

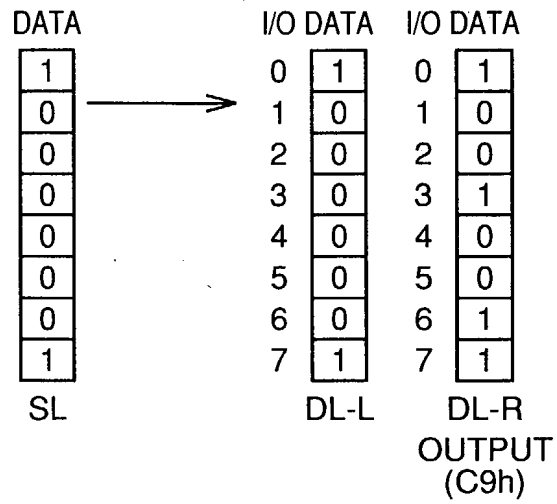


FIG.23

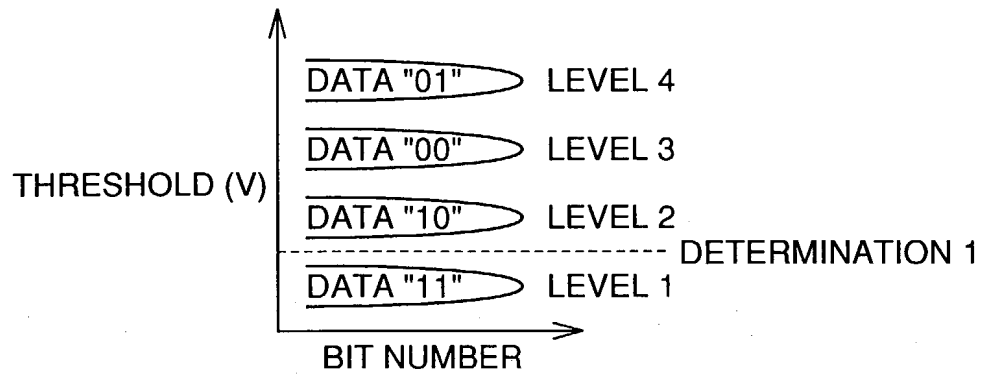


FIG.24

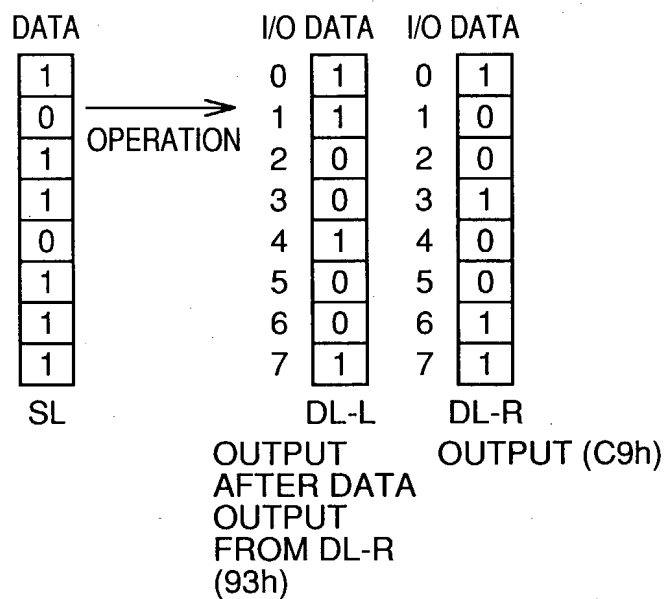


FIG.25

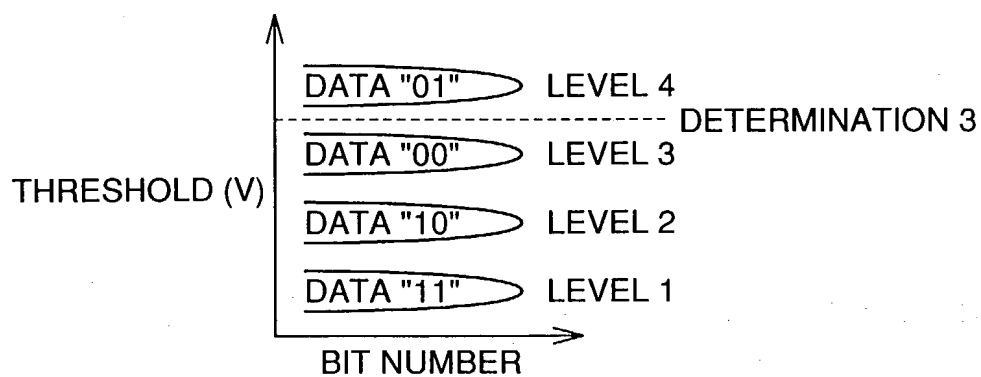


FIG.26

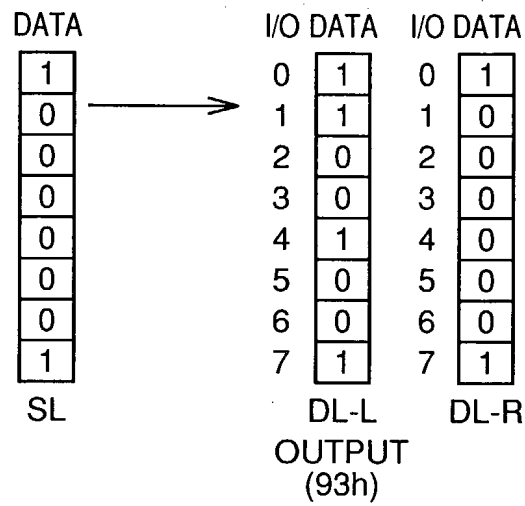


FIG.27

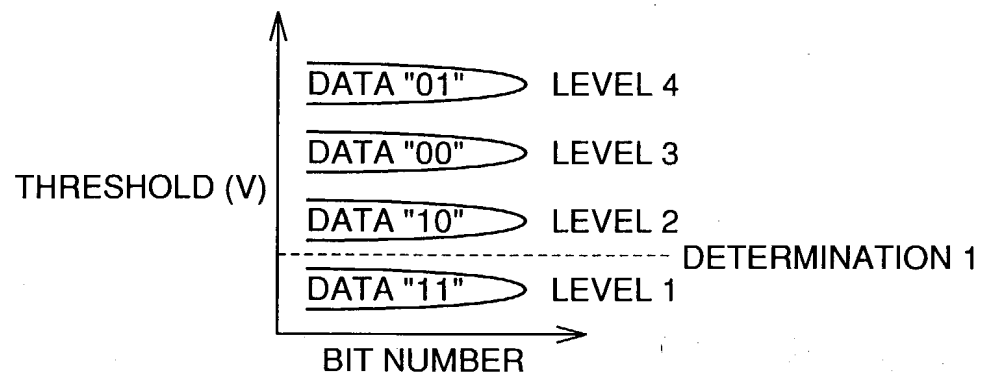




FIG.28

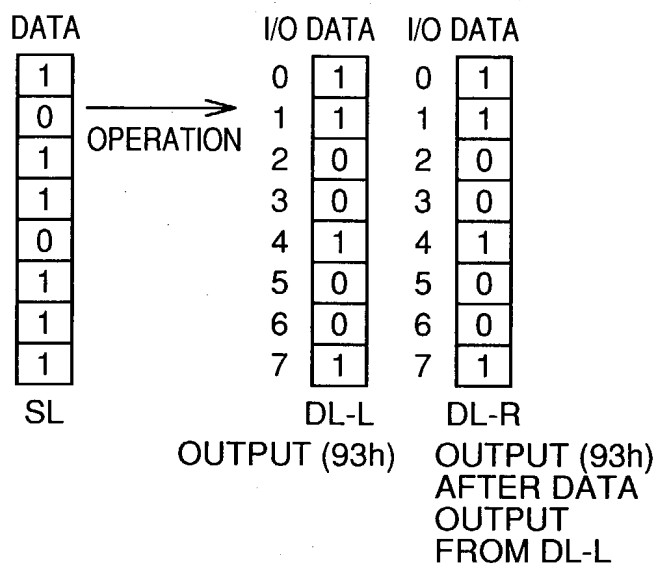


FIG.29

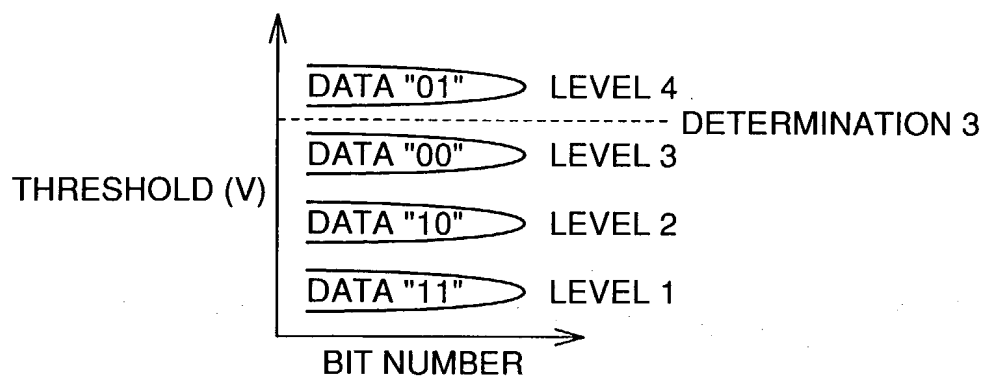


FIG.30

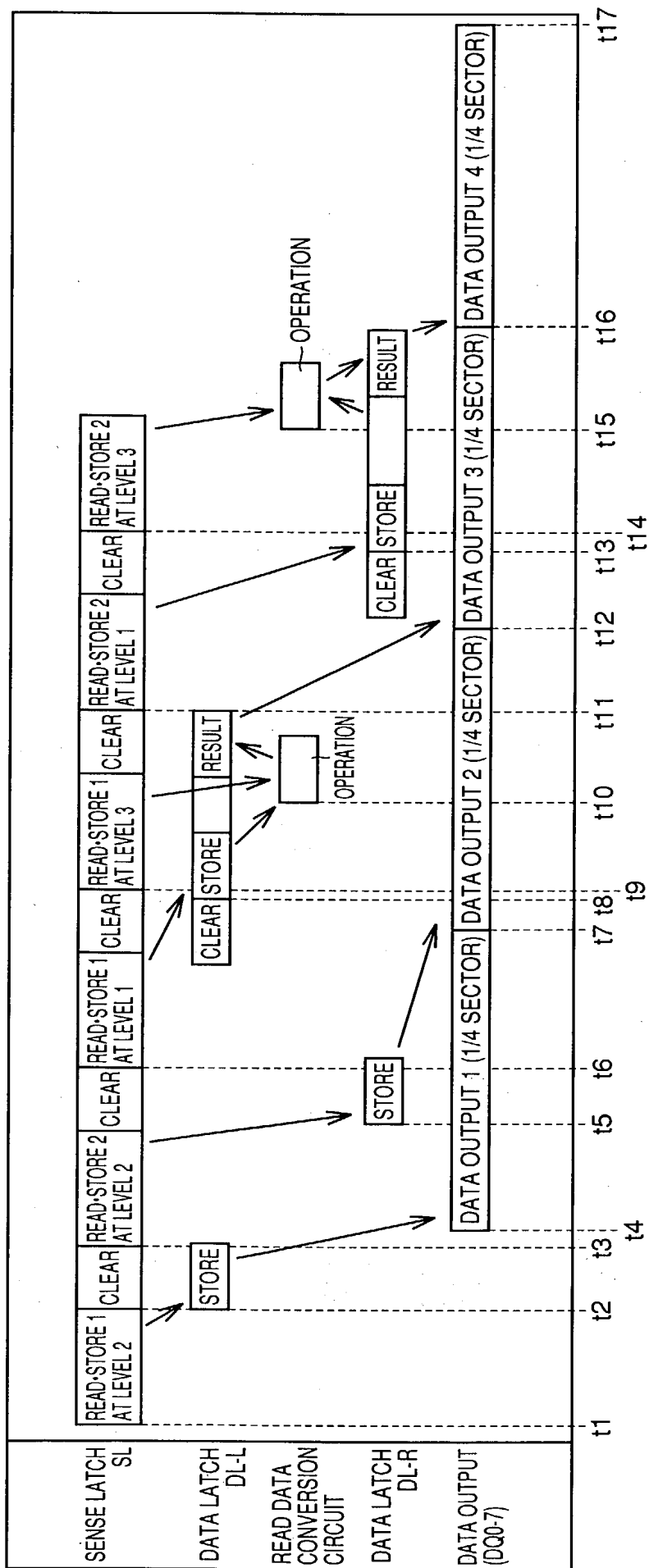


FIG.31

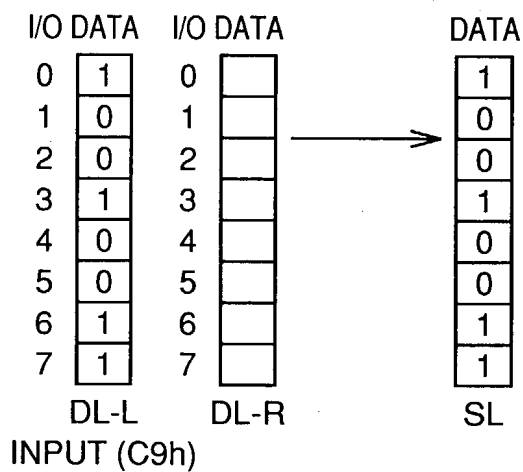


FIG.32

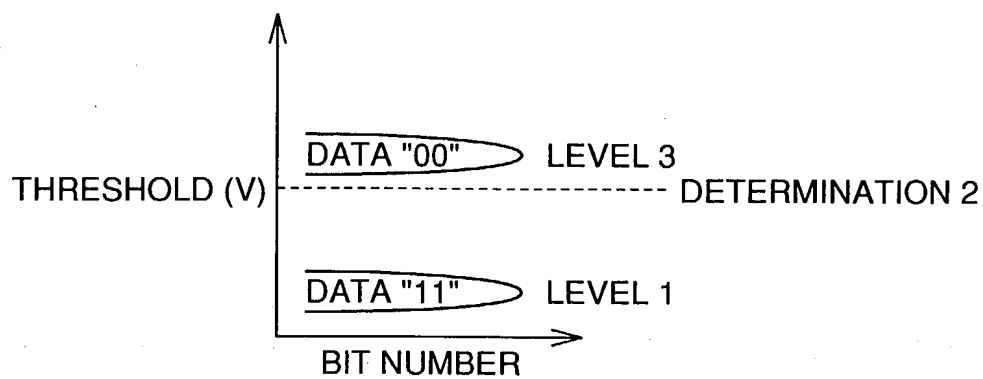


FIG.33

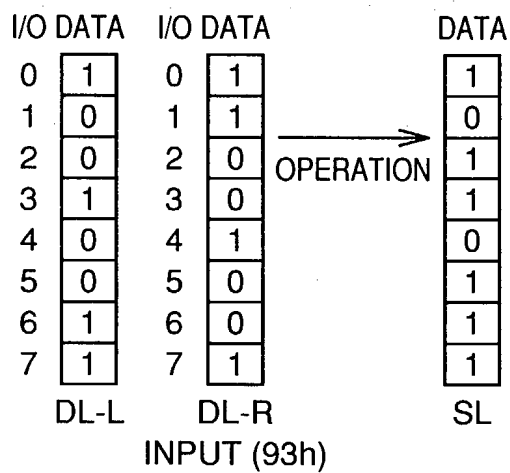


FIG.34

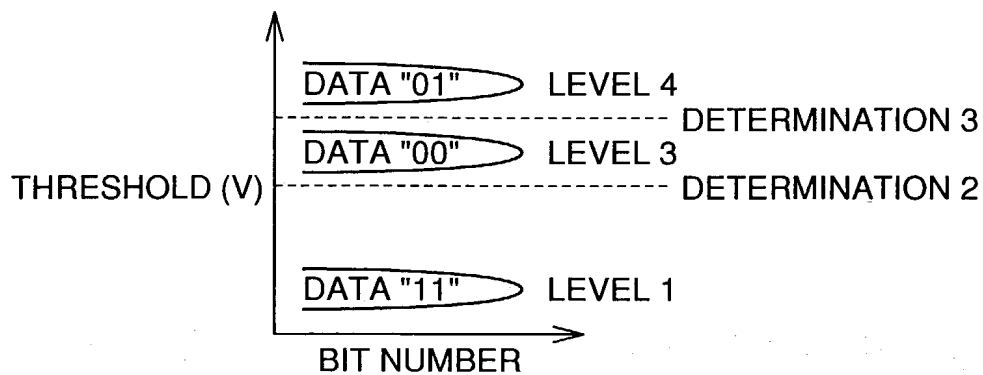


FIG.35

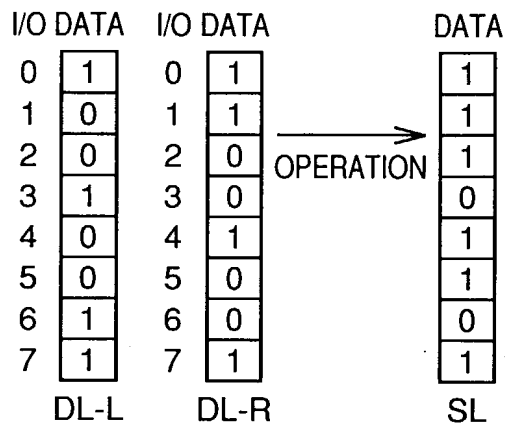


FIG.36

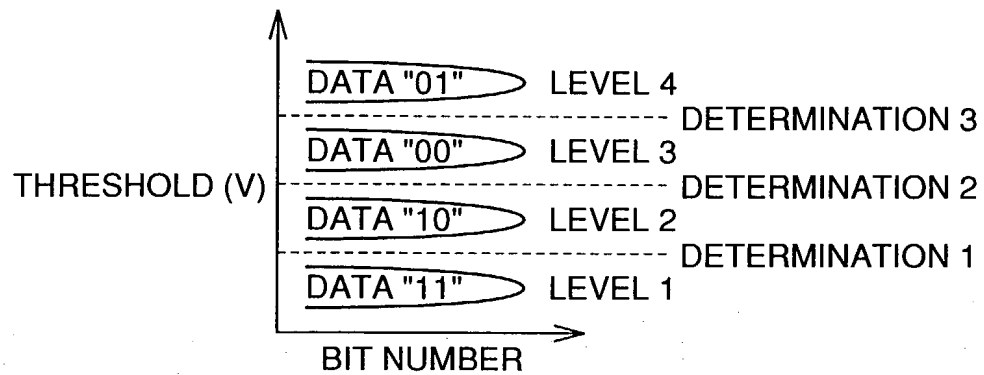


FIG.37

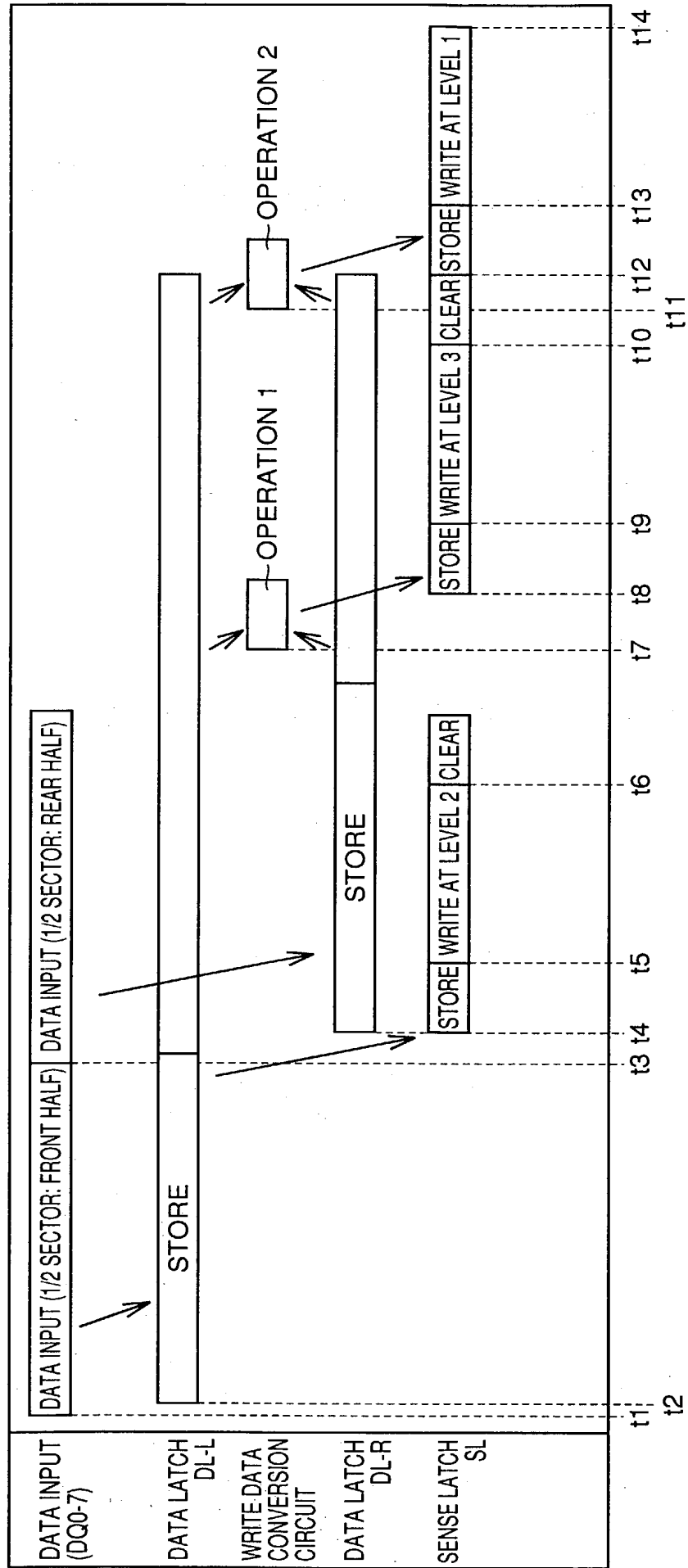


FIG.38

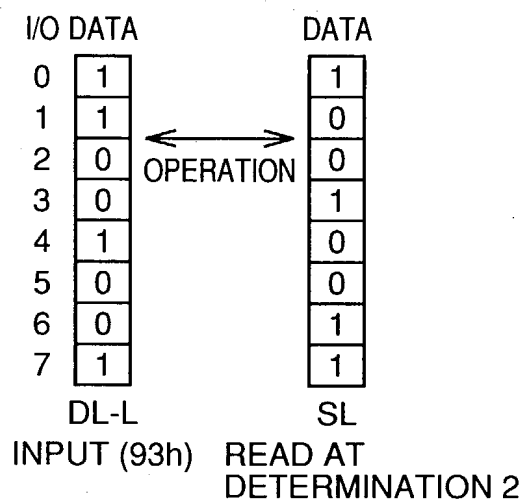


FIG.39

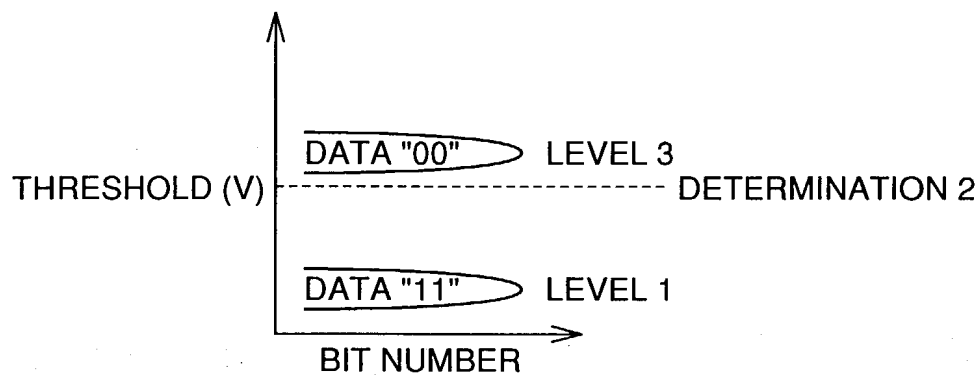


FIG.40

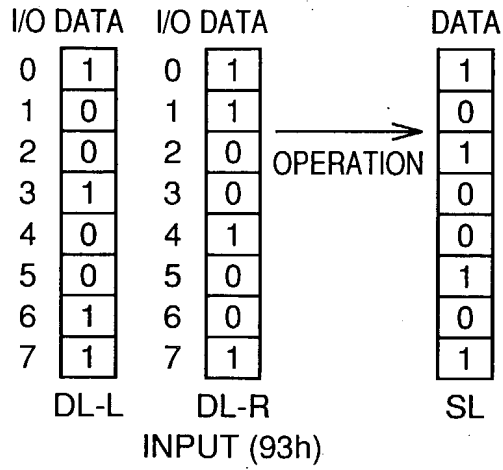


FIG.41

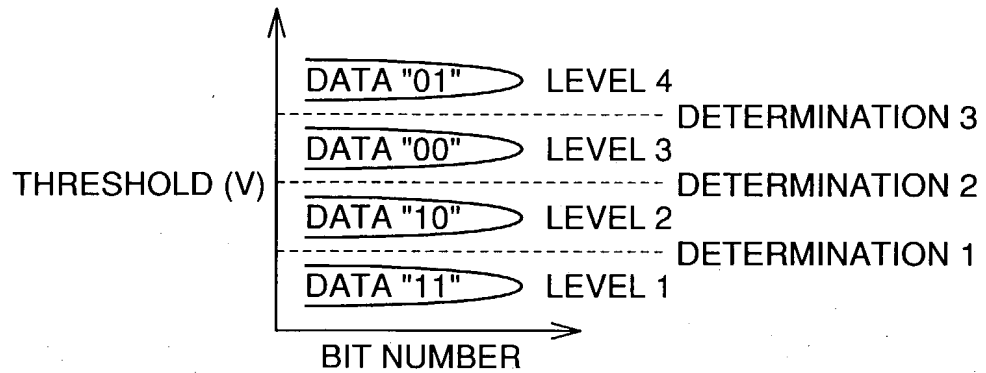
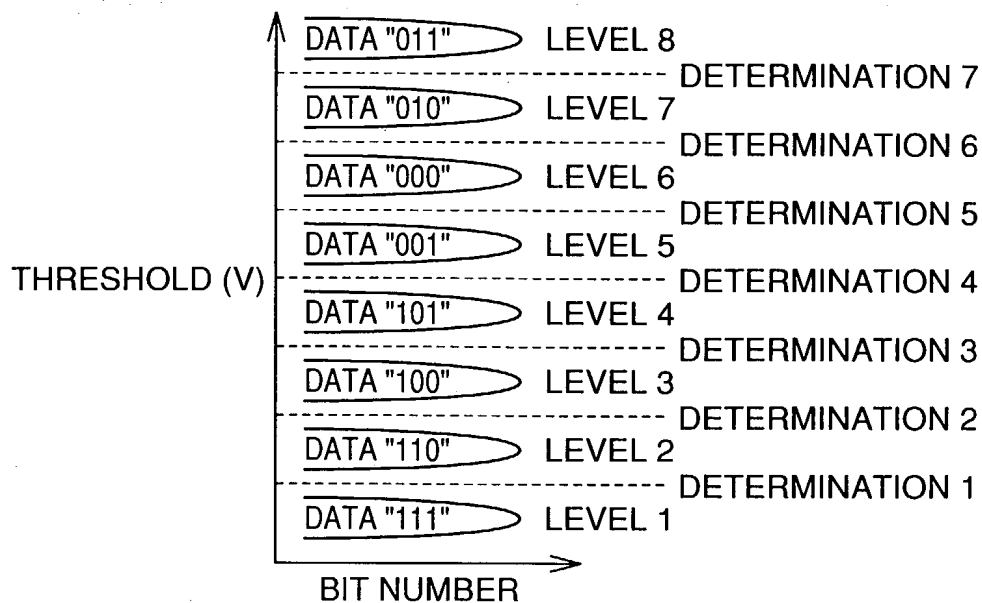






FIG.42

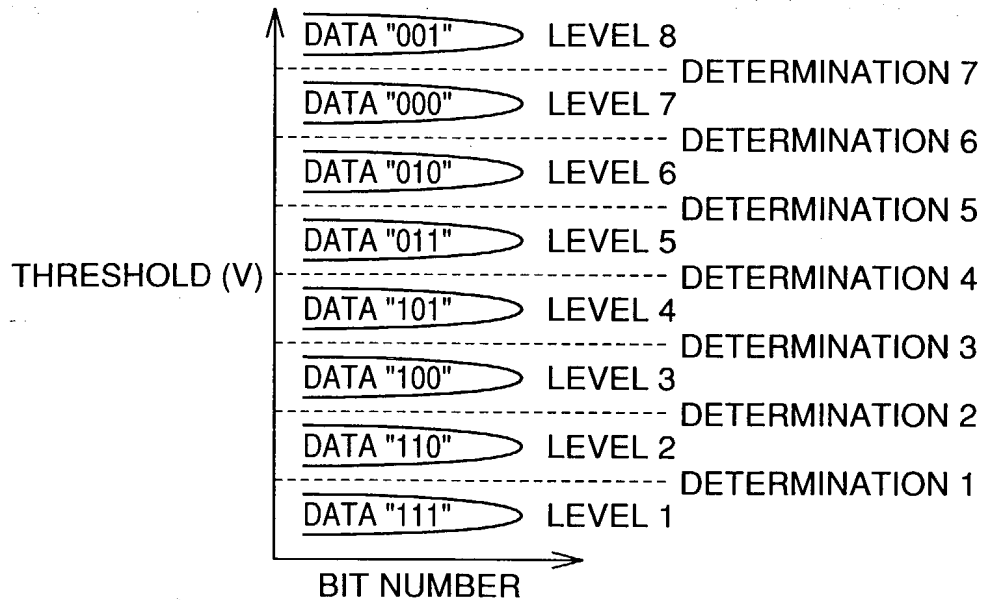


MOST SIGNIFICANT BIT DEFINED  
AT DETERMINATION 4  
INTERMEDIATE BIT DEFINED  
AT DETERMINATION 2 & 6  
LEAST SIGNIFICANT BIT DEFINED  
AT DETERMINATION 1, 3, 5 & 7

OK



FIG.43



MOST SIGNIFICANT BIT DEFINED  
AT DETERMINATION 4  
"0" & "1" AT LEVELS 3, 4, 5 & 6  
AT DETERMINATION 2 & 6  
NOT DEFINED  
LEAST SIGNIFICANT BIT DEFINED  
AT DETERMINATION 1, 3, 5 & 7

NG

FIG.44

|      | IN-CELL DATA |   | I/O DATA  | I/O DATA | I/O DATA | I/O DATA |
|------|--------------|---|-----------|----------|----------|----------|
| MC0  | "0111"       | 0 | 0         | 0        | 0        | 0        |
| MC1  | "0110"       | 0 | 1         | 1        | 1        | 1        |
| MC2  | "0100"       | 0 | 2         | 2        | 2        | 2        |
| MC3  | "0101"       | 0 | 3         | 3        | 3        | 3        |
| MC4  | "0001"       | 0 | 4         | 4        | 4        | 4        |
| MC5  | "0000"       | 0 | 5         | 5        | 5        | 5        |
| MC6  | "0010"       | 0 | 6         | 6        | 6        | 6        |
| MC7  | "0011"       | 0 | 7         | 7        | 7        | 7        |
| MC8  | "1011"       | 1 | 0         | 0        | 0        | 0        |
| MC9  | "1010"       | 1 | 1         | 1        | 1        | 1        |
| MC10 | "1000"       | 1 | 2         | 2        | 2        | 2        |
| MC11 | "1001"       | 1 | 3         | 3        | 3        | 3        |
| MC12 | "1101"       | 1 | 4         | 4        | 4        | 4        |
| MC13 | "1100"       | 1 | 5         | 5        | 5        | 5        |
| MC14 | "1110"       | 1 | 6         | 6        | 6        | 6        |
| MC15 | "1111"       | 1 | 7         | 7        | 7        | 7        |
|      | SL           |   | DL-1      | DL-2     | DL-3     | DL-4     |
|      |              |   | OUTPUT    |          |          |          |
|      |              |   | (00h-FFh) |          |          |          |

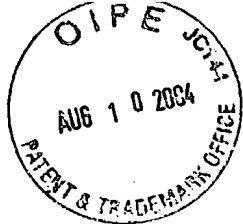
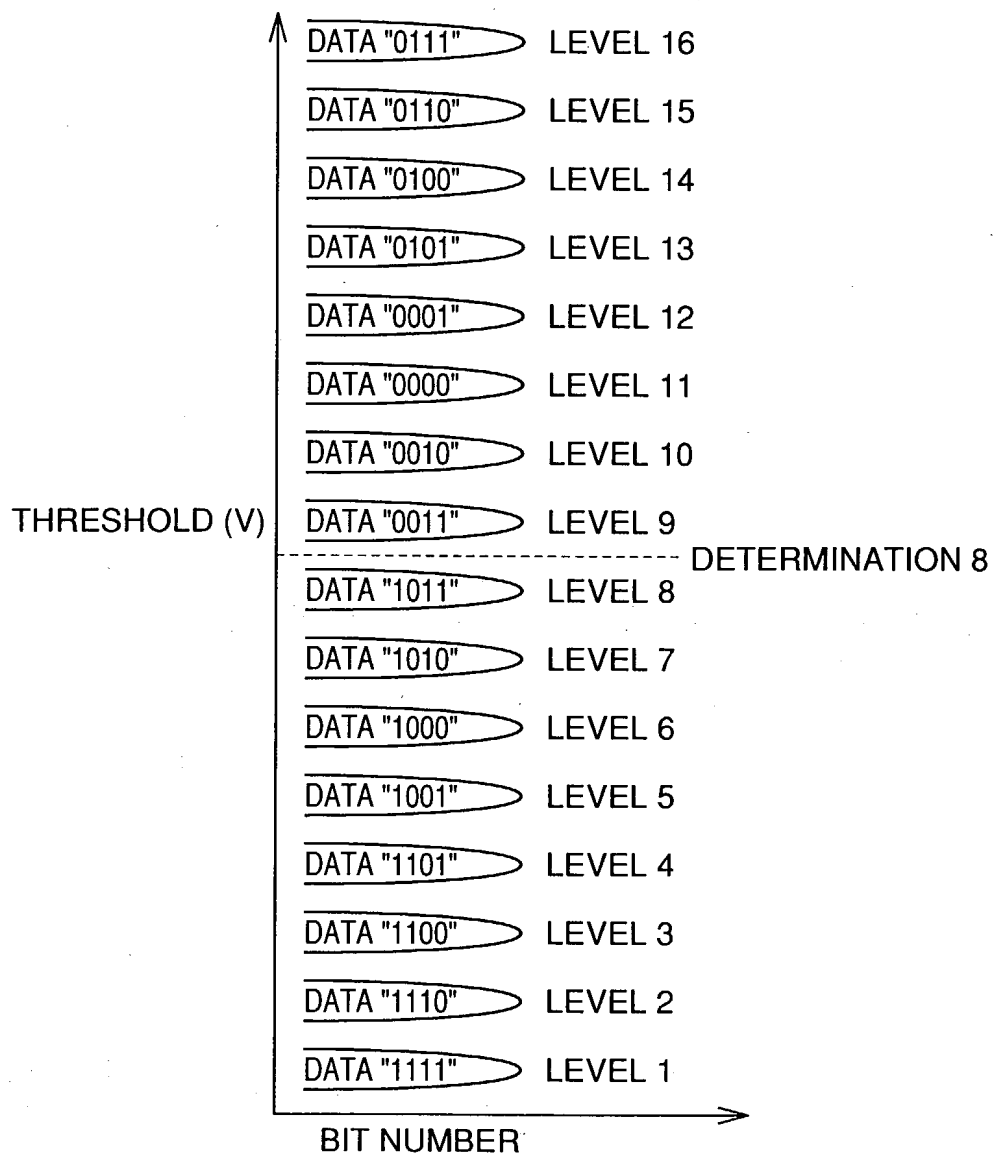


FIG.45



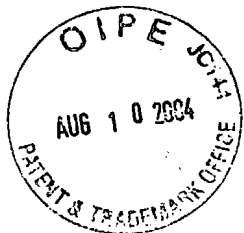


FIG.46

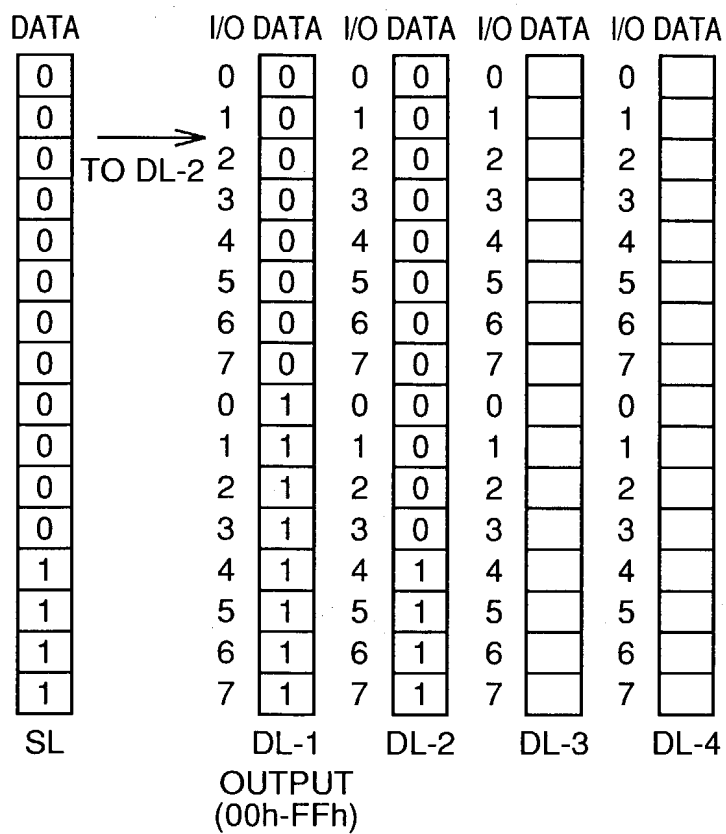




FIG.47

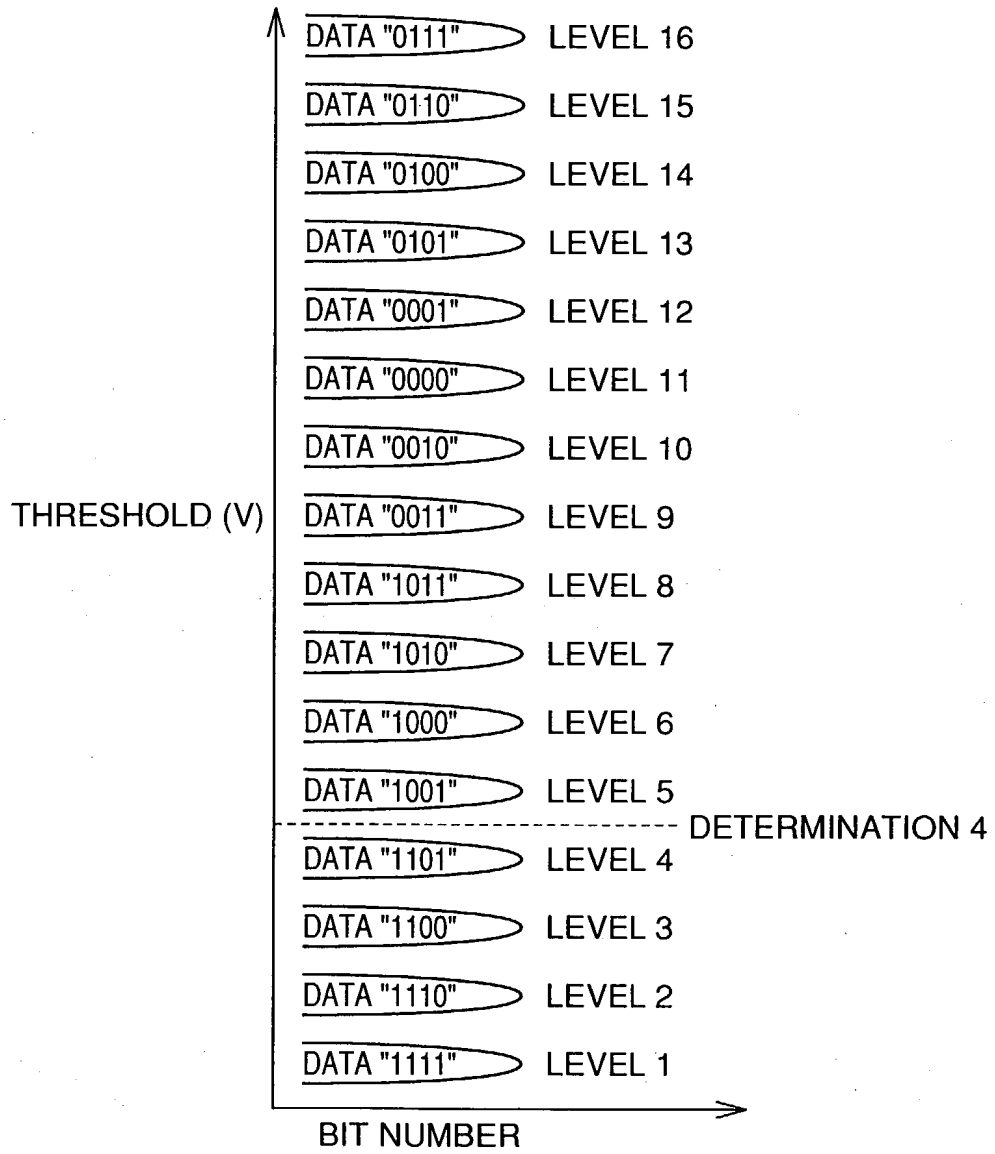


FIG.48

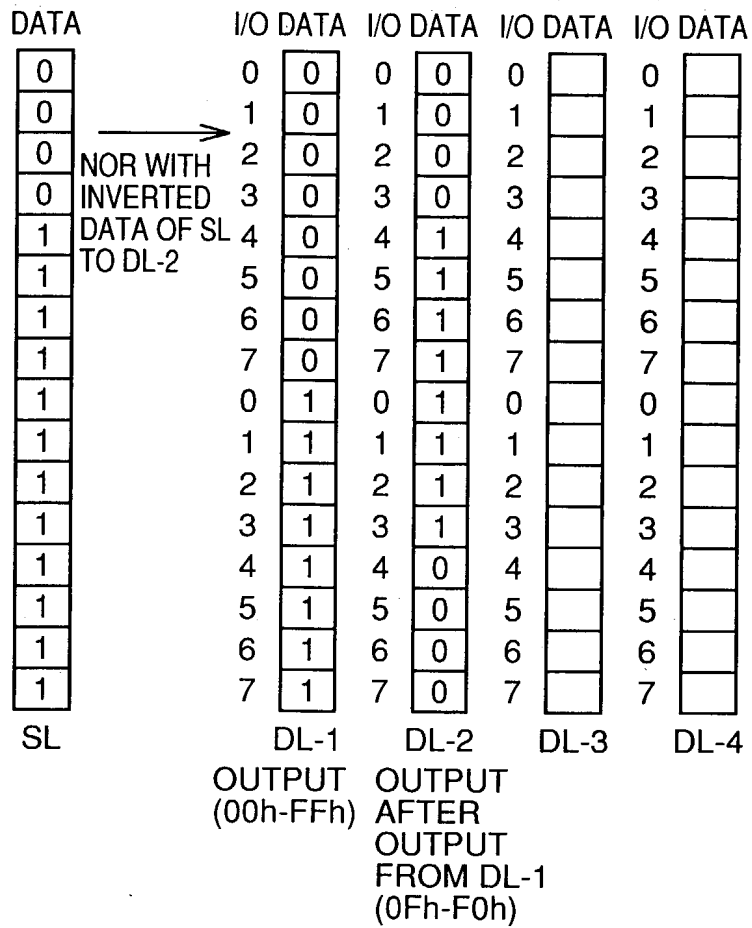




FIG.49

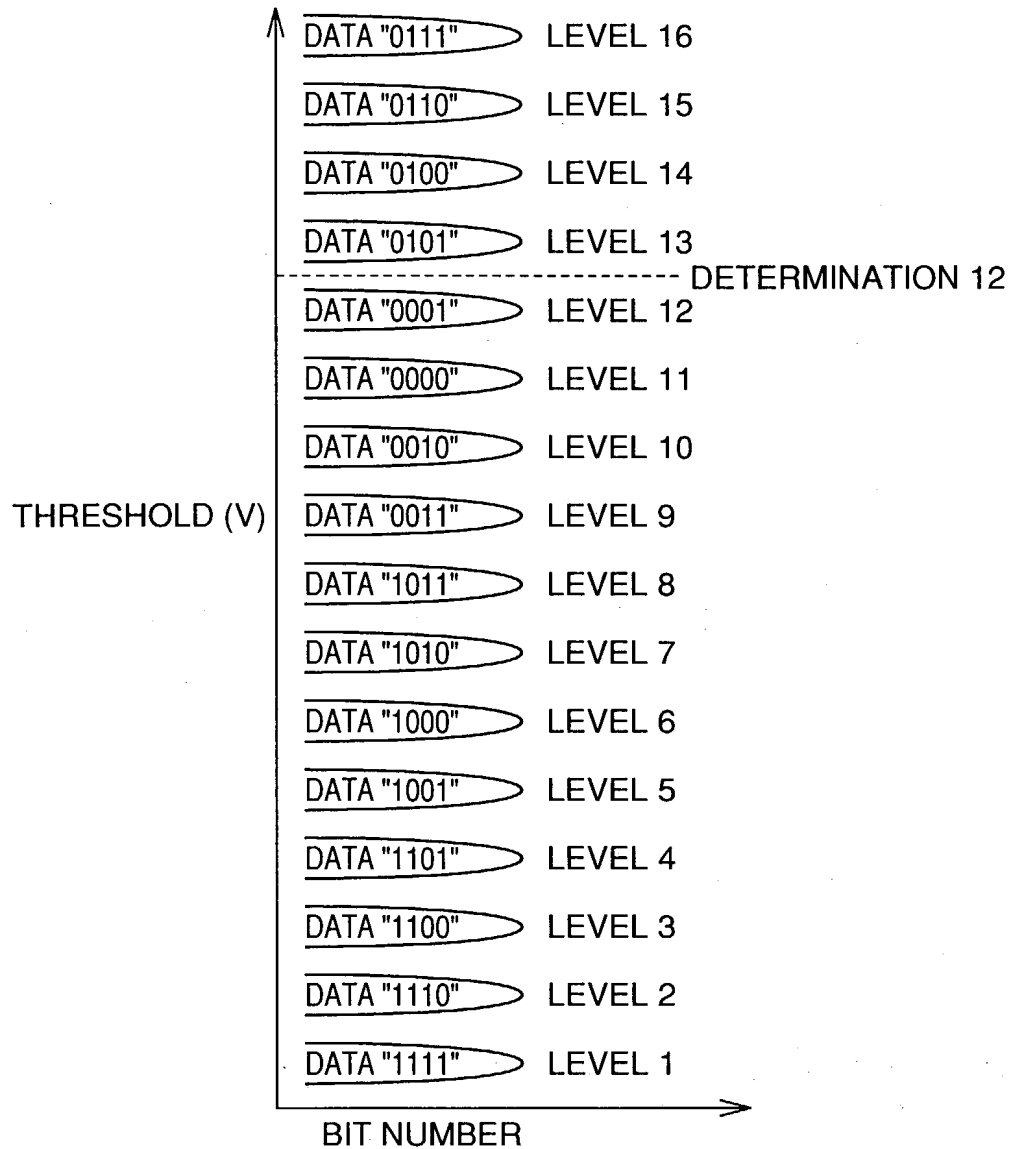






FIG.50

| DATA |           | I/O DATA         | I/O DATA                                | I/O DATA | I/O DATA |
|------|-----------|------------------|---|----------|----------|
| 0    |           | 0                | 0                                       | 0        | 0        |
| 0    |           | 1                | 0                                       | 1        | 0        |
| 0    | → TO DL-3 | 2                | 0                                       | 2        | 0        |
| 0    |           | 3                | 0                                       | 3        | 0        |
| 0    |           | 4                | 0                                       | 4        | 1        |
| 0    |           | 5                | 0                                       | 5        | 1        |
| 0    |           | 6                | 0                                       | 6        | 1        |
| 0    |           | 7                | 0                                       | 7        | 1        |
| 0    |           | 0                | 1                                       | 0        | 0        |
| 0    |           | 1                | 1                                       | 1        | 0        |
| 0    |           | 2                | 1                                       | 2        | 0        |
| 0    |           | 3                | 1                                       | 3        | 0        |
| 0    |           | 4                | 1                                       | 4        | 0        |
| 0    |           | 5                | 1                                       | 5        | 0        |
| 1    |           | 6                | 1                                       | 6        | 1        |
| 1    |           | 7                | 1                                       | 7        | 0        |
| SL   |           | DL-1             | DL-2                                    | DL-3     | DL-4     |
|      |           | OUTPUT (00h-FFh) | OUTPUT AFTER OUTPUT FROM DL-1 (0Fh-F0h) |          |          |

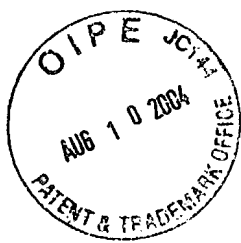


FIG.51

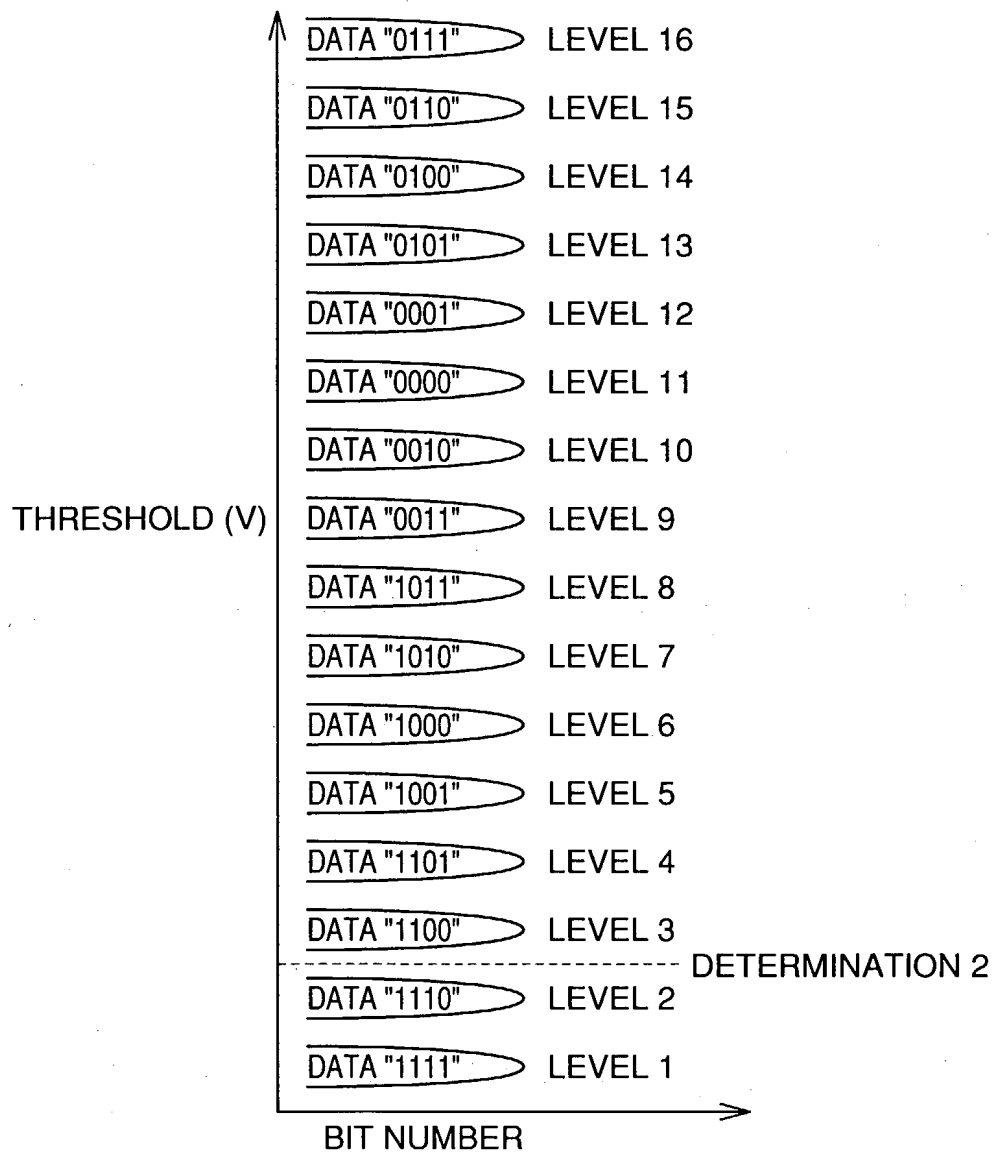


FIG.52

| DATA |  | I/O DATA  | I/O DATA  | I/O DATA | I/O DATA |
|------|--|-----------|-----------|----------|----------|
| 0    |  | 0 0       | 0 0       | 0 0      | 0        |
| 0    |  | 1 0       | 1 0       | 1 0      | 1        |
| 0    |  | 2 0       | 2 0       | 2 0      | 2        |
| 0    |  | 3 0       | 3 0       | 3 0      | 3        |
| 0    |  | 4 0       | 4 1       | 4 0      | 4        |
| 0    |  | 5 0       | 5 1       | 5 0      | 5        |
| 0    |  | 6 0       | 6 1       | 6 0      | 6        |
| 0    |  | 7 0       | 7 1       | 7 0      | 7        |
| 0    |  | 0 1       | 0 1       | 0 0      | 0        |
| 0    |  | 1 1       | 1 1       | 1 0      | 1        |
| 1    |  | 2 1       | 2 1       | 2 1      | 2        |
| 1    |  | 3 1       | 3 1       | 3 1      | 3        |
| 1    |  | 4 1       | 4 0       | 4 1      | 4        |
| 1    |  | 5 1       | 5 0       | 5 1      | 5        |
| 1    |  | 6 1       | 6 0       | 6 0      | 6        |
| 1    |  | 7 1       | 7 0       | 7 0      | 7        |
| SL   |  | DL-1      | DL-2      | DL-3     | DL-4     |
|      |  | OUTPUT    | OUTPUT    |          |          |
|      |  | (00h-FFh) | AFTER     |          |          |
|      |  |           | OUTPUT    |          |          |
|      |  |           | FROM DL-1 |          |          |
|      |  |           | (0Fh-F0h) |          |          |

NOR WITH  
 INVERTED  
 DATA OF SL  
 TO DL-3



FIG.53

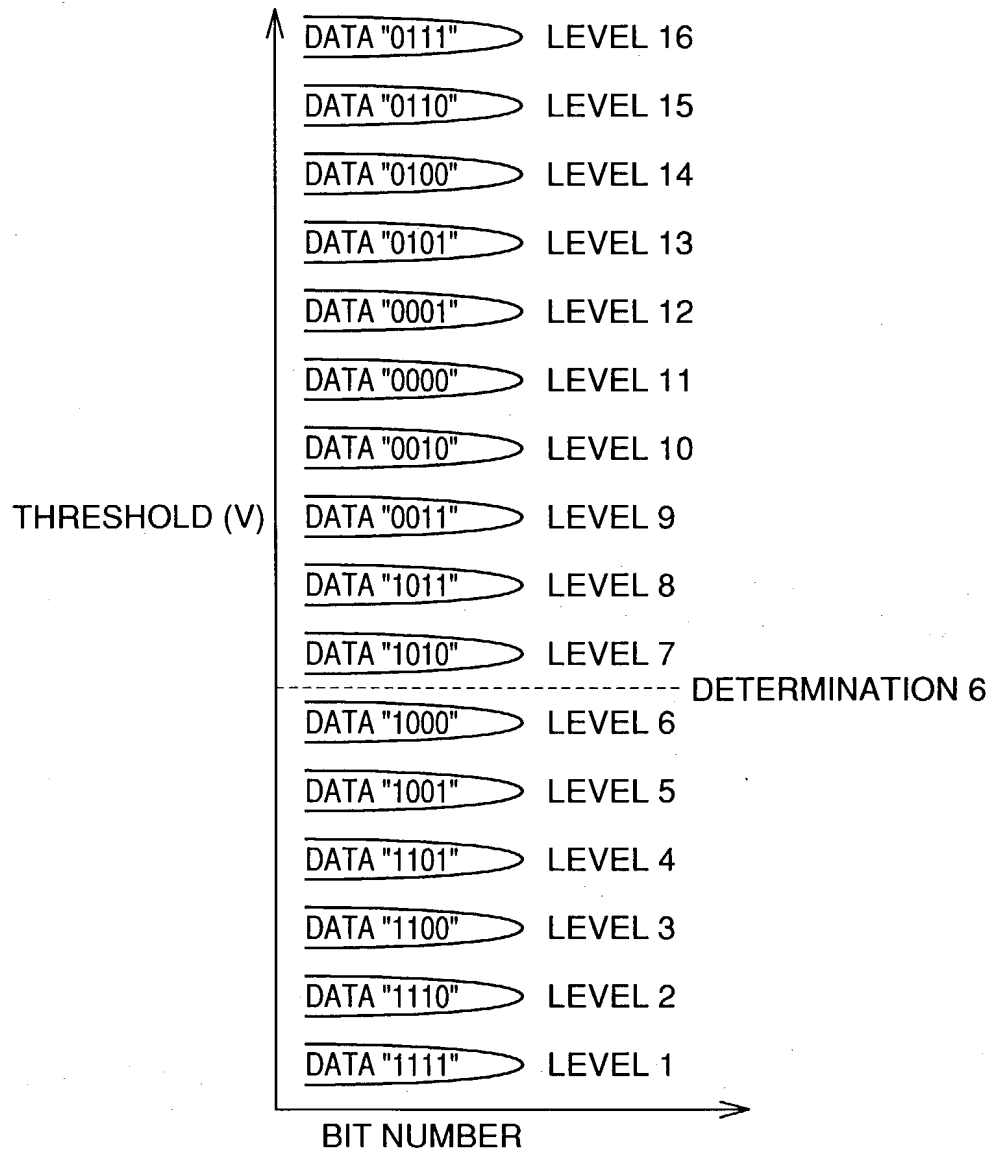


FIG.54

| DATA |           | I/O DATA  | I/O DATA  | I/O DATA | I/O DATA |
|------|-----------|-----------|-----------|----------|----------|
| 0    |           | 0         | 0         | 0        | 0        |
| 0    |           | 1         | 0         | 1        | 0        |
| 0    | → TO DL-4 | 2         | 0         | 2        | 0        |
| 0    |           | 3         | 0         | 3        | 0        |
| 0    |           | 4         | 0         | 4        | 0        |
| 0    |           | 5         | 0         | 5        | 0        |
| 1    |           | 6         | 0         | 6        | 1        |
| 1    |           | 7         | 0         | 7        | 1        |
| 1    |           | 0         | 1         | 0        | 0        |
| 1    |           | 1         | 1         | 1        | 0        |
| 1    |           | 2         | 1         | 2        | 1        |
| 1    |           | 3         | 1         | 3        | 1        |
| 1    |           | 4         | 1         | 4        | 1        |
| 1    |           | 5         | 1         | 5        | 1        |
| 1    |           | 6         | 1         | 6        | 0        |
| 1    |           | 7         | 1         | 7        | 0        |
| SL   |           | DL-1      | DL-2      | DL-3     | DL-4     |
|      |           | OUTPUT    | OUTPUT    |          |          |
|      |           | (00h-FFh) | AFTER     |          |          |
|      |           |           | OUTPUT    |          |          |
|      |           |           | FROM DL-1 |          |          |
|      |           |           | (0Fh-F0h) |          |          |



FIG.55

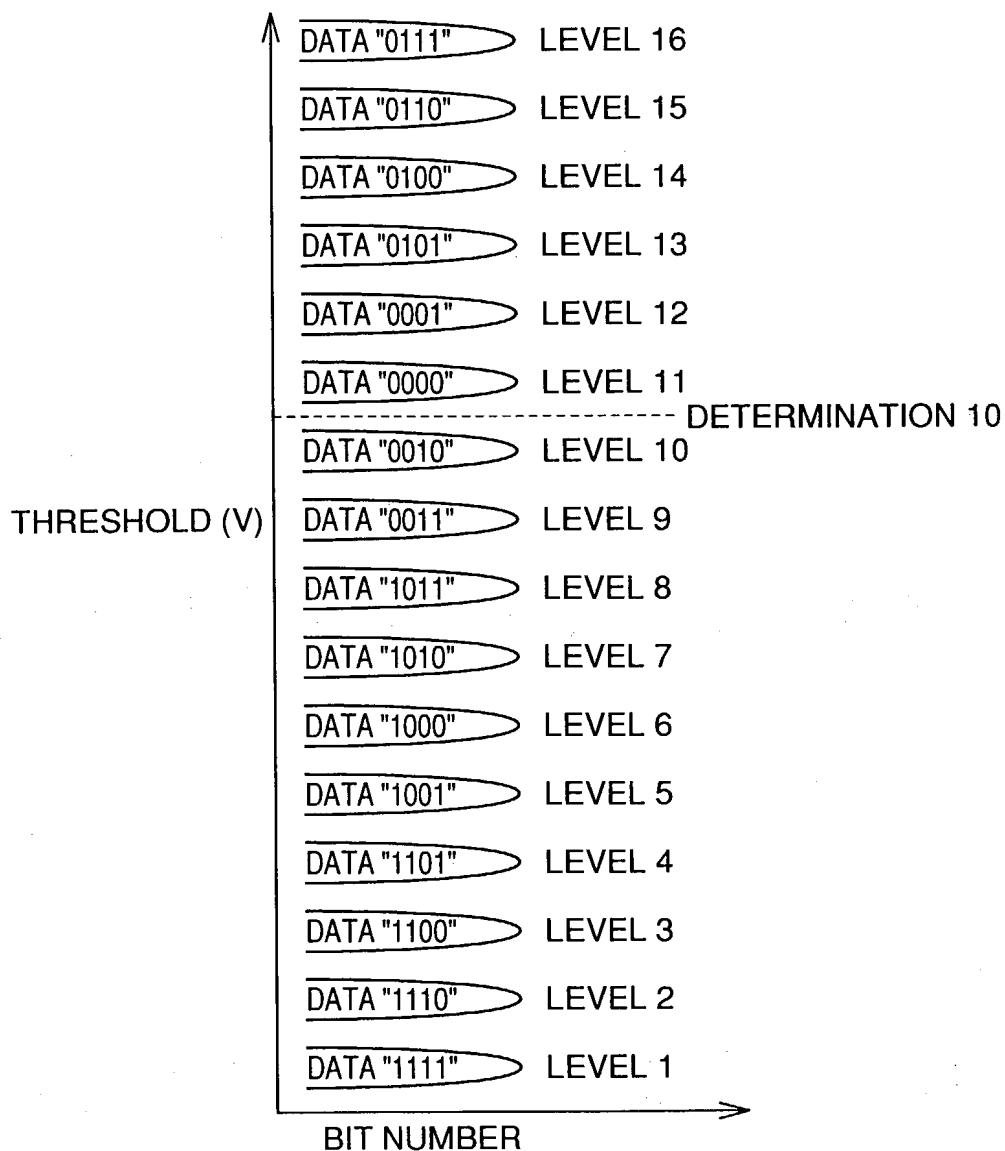


FIG.56

| DATA |            | I/O DATA  | I/O DATA  | I/O DATA | I/O DATA |
|------|------------|-----------|-----------|----------|----------|
| 0    |            | 0         | 0         | 0        | 0        |
| 0    |            | 1         | 0         | 1        | 0        |
| 1    |            | 2         | 0         | 2        | 0        |
| 1    | NOR        | 3         | 0         | 3        | 0        |
| 1    | INVERTED   | 4         | 0         | 4        | 0        |
| 1    | DATA OF SL | 5         | 0         | 5        | 0        |
| 1    | AND DATA   | 6         | 0         | 6        | 0        |
| 1    | OF DL-4    | 7         | 0         | 7        | 0        |
| 1    | TO DL-4    | 0         | 1         | 0        | 0        |
| 1    |            | 1         | 1         | 1        | 0        |
| 1    |            | 2         | 1         | 2        | 1        |
| 1    |            | 3         | 1         | 3        | 1        |
| 1    |            | 4         | 1         | 4        | 0        |
| 1    |            | 5         | 1         | 5        | 0        |
| 1    |            | 6         | 1         | 6        | 0        |
| 1    |            | 7         | 1         | 7        | 0        |
| 1    |            |           |           |          |          |
| SL   |            | DL-1      | DL-2      | DL-3     | DL-4     |
|      |            | OUTPUT    | OUTPUT    |          |          |
|      |            | (00h-FFh) | AFTER     |          |          |
|      |            |           | OUTPUT    |          |          |
|      |            |           | FROM DL-1 |          |          |
|      |            |           | (0Fh-F0h) |          |          |



FIG.57

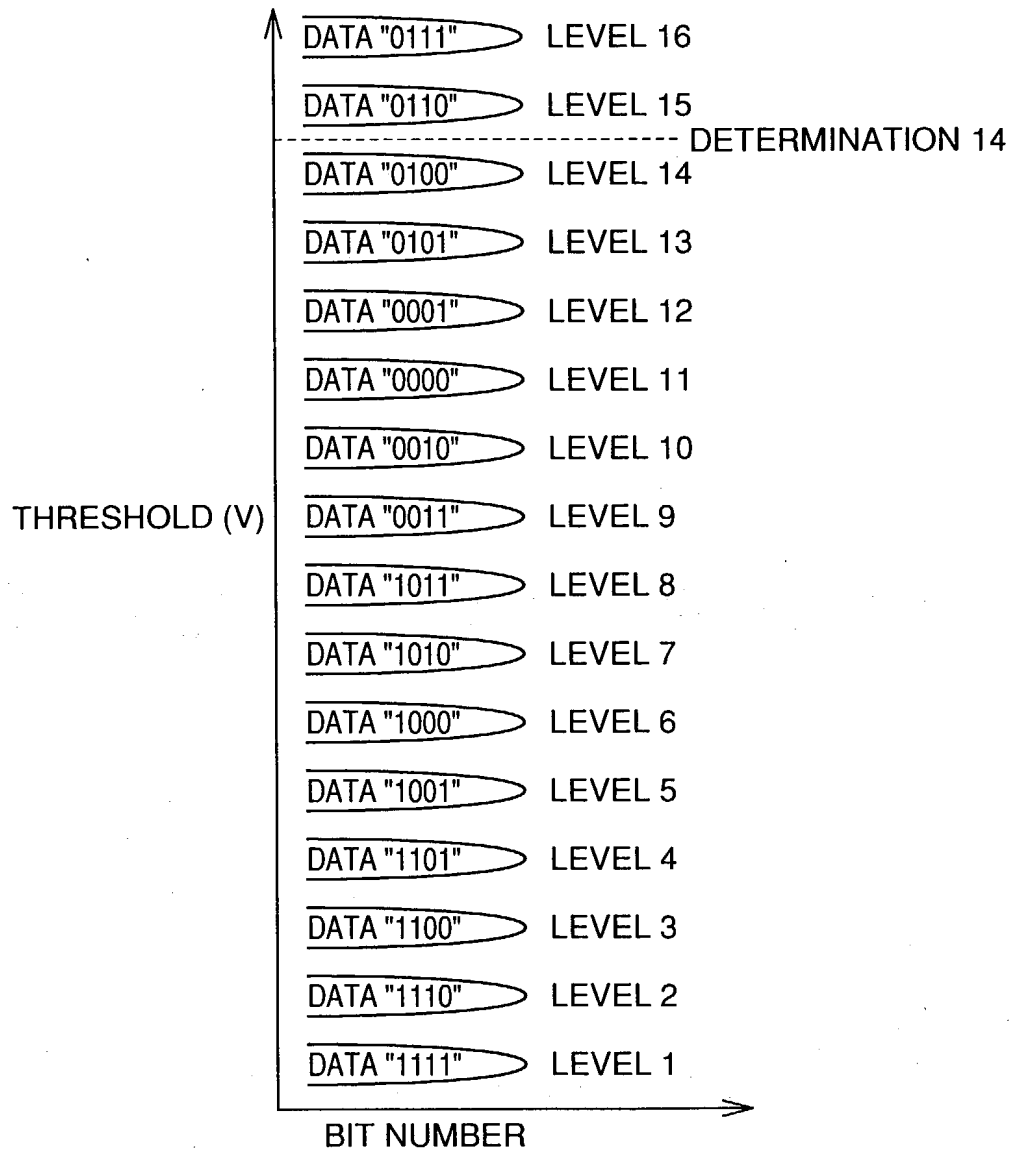




FIG.58

| DATA | I/O DATA         | I/O DATA                                | I/O DATA  | I/O DATA |
|------|------------------|---|---|----------|
|      | 0 0              | 0 0                                     | 0 0   | 0        |
|      | 1 0              | 1 0                                     | 1 0   | 1        |
|      | 2 0              | 2 0                                     | 2 1   | 2        |
|      | 3 0              | 3 0                                     | 3 1   | 3        |
|      | 4 0              | 4 1                                     | 4 1   | 4        |
|      | 5 0              | 5 1                                     | 5 1   | 5        |
|      | 6 0              | 6 1                                     | 6 0   | 6        |
|      | 7 0              | 7 1                                     | 7 0   | 7        |
|      | 0 1              | 0 1                                     | 0 0   | 0        |
|      | 1 1              | 1 1                                     | 1 0   | 1        |
|      | 2 1              | 2 1                                     | 2 1   | 2        |
|      | 3 1              | 3 1                                     | 3 1   | 3        |
|      | 4 1              | 4 0                                     | 4 1   | 4        |
|      | 5 1              | 5 0                                     | 5 1   | 5        |
|      | 6 1              | 6 0                                     | 6 0   | 6        |
|      | 7 1              | 7 0                                     | 7 0   | 7        |
| SL   | DL-1             | DL-2                                    | DL-3  | DL-4     |
|      | OUTPUT (00h-FFh) | OUTPUT AFTER OUTPUT FROM DL-1 (0Fh-F0h) | OR DATA OF DL-3 AND DL-4 AND STORE RESULT IN DL-3 |          |



FIG.59

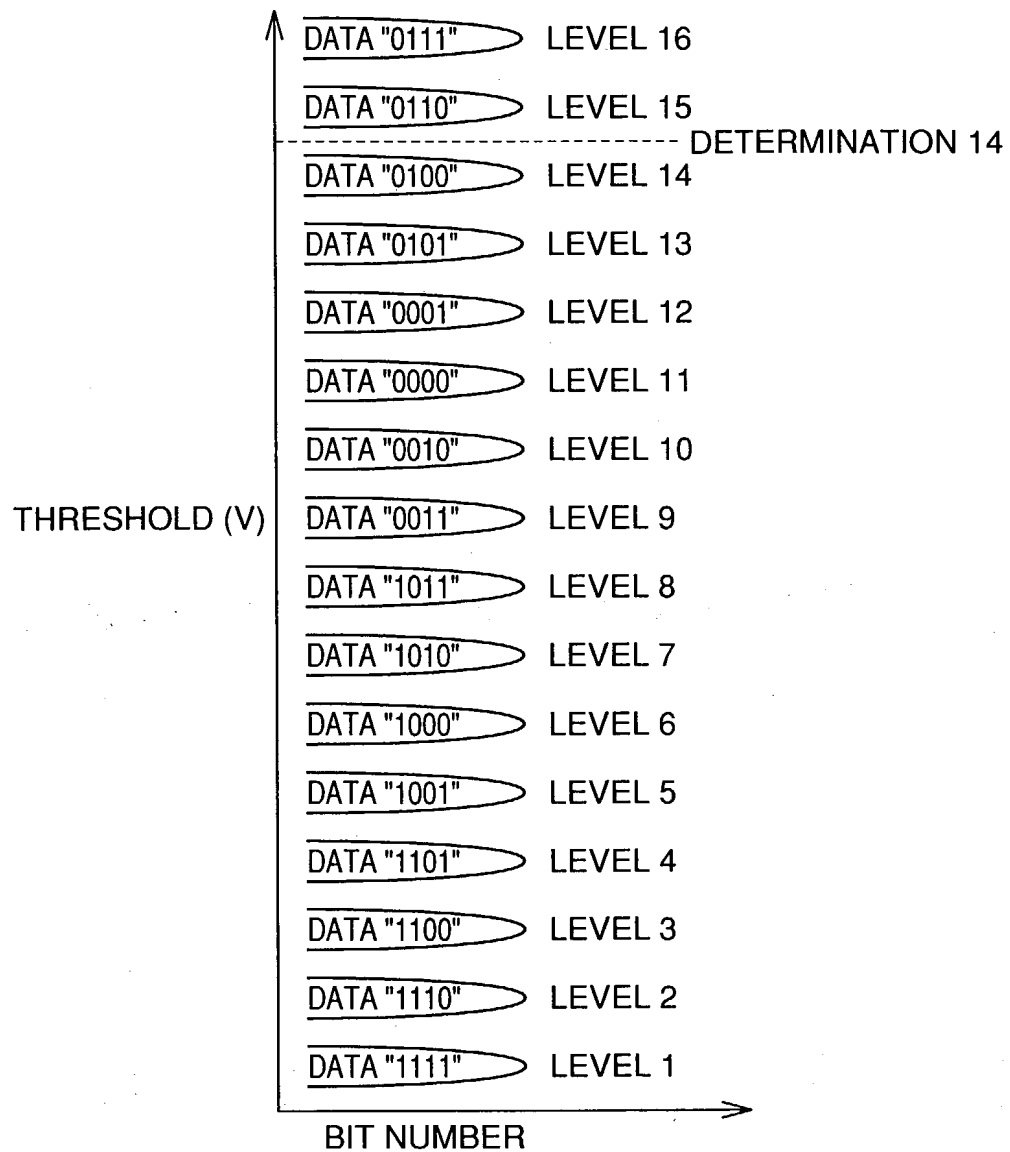


FIG.60

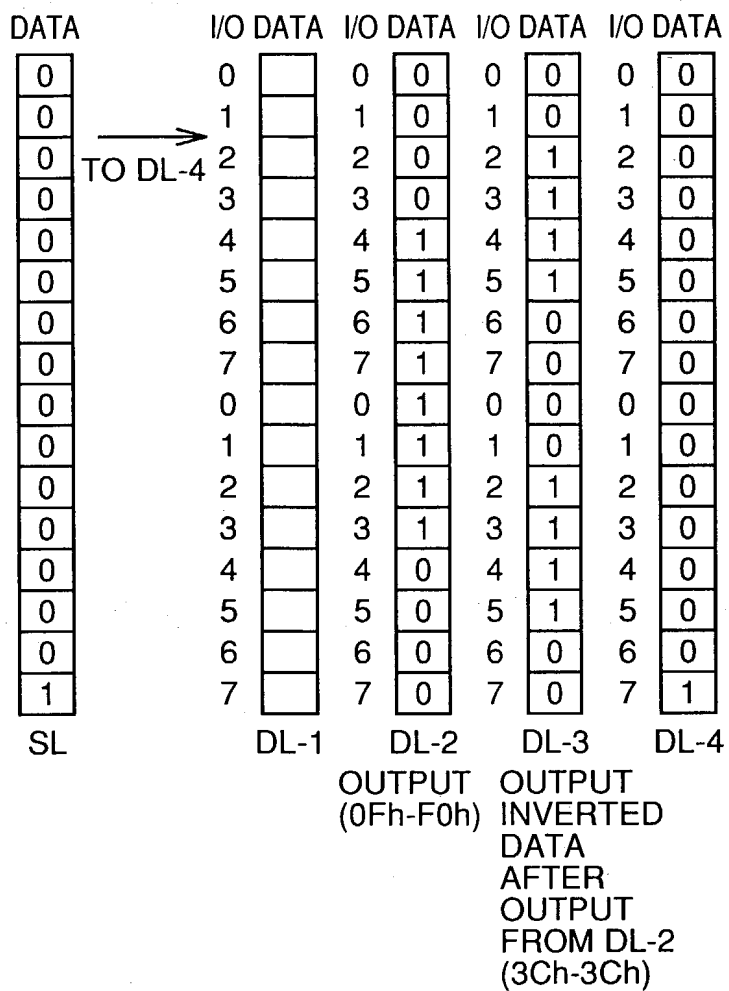


FIG.61

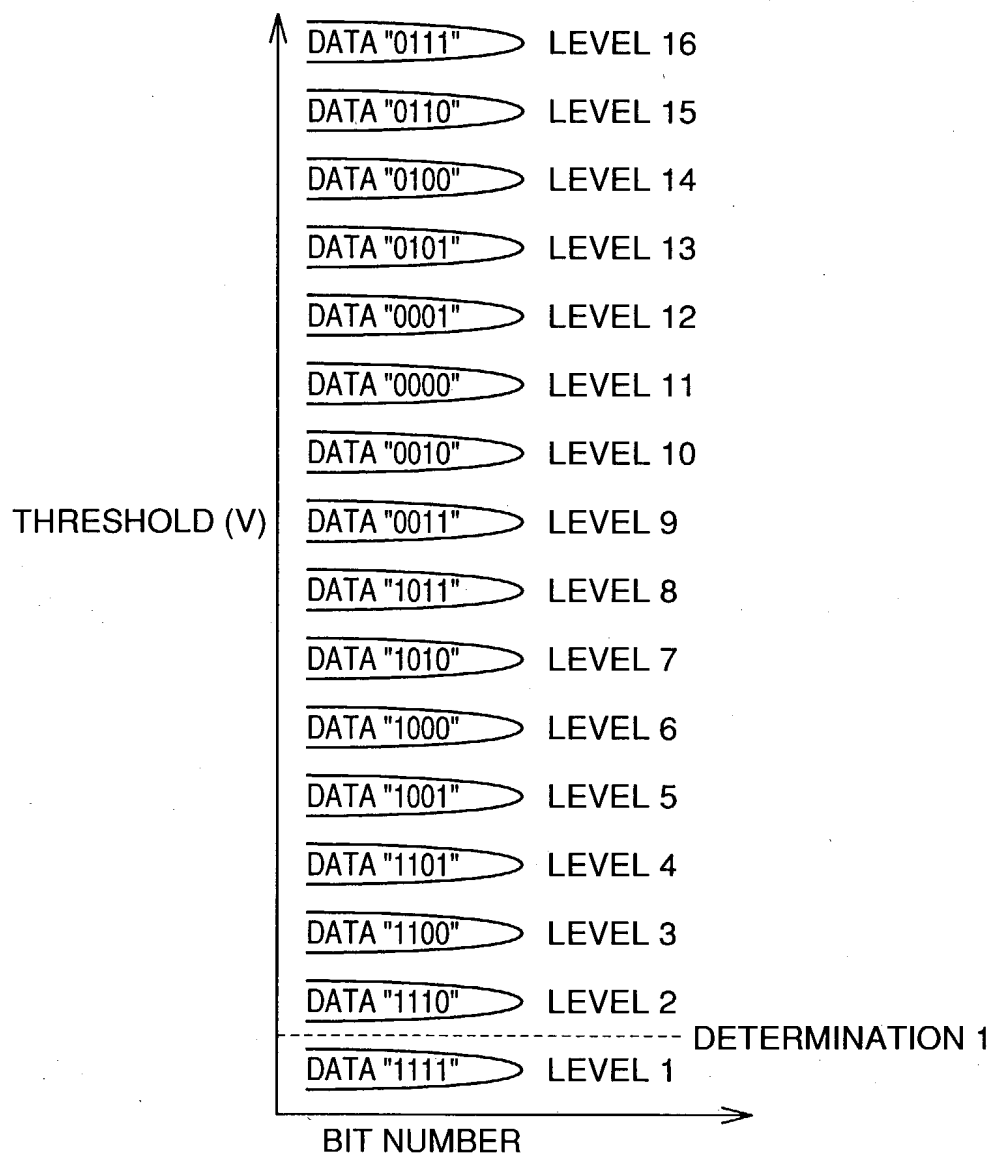


FIG.62

| DATA |            | I/O DATA  | I/O DATA  | I/O DATA | I/O DATA |
|------|------------|-----------|-----------|----------|----------|
| 0    |            | 0         | 0         | 0        | 0        |
| 0    |            | 1         | 0         | 1        | 0        |
| 0    |            | 2         | 0         | 2        | 1        |
| 0    | NOR        | 3         | 0         | 3        | 1        |
| 0    | INVERTED   | 4         | 1         | 4        | 1        |
| 0    | DATA OF SL | 5         | 1         | 5        | 1        |
| 0    | AND DATA   | 6         | 1         | 6        | 0        |
| 0    | OF DL-4    | 7         | 1         | 7        | 0        |
| 0    | TO DL-4    | 0         | 1         | 0        | 0        |
| 0    |            | 1         | 1         | 1        | 0        |
| 0    |            | 2         | 1         | 2        | 1        |
| 0    |            | 3         | 1         | 3        | 1        |
| 0    |            | 4         | 0         | 4        | 1        |
| 1    |            | 5         | 0         | 5        | 1        |
| 1    |            | 6         | 0         | 6        | 0        |
| 1    |            | 7         | 0         | 7        | 0        |
| SL   |            | DL-1      | DL-2      | DL-3     | DL-4     |
|      |            | OUTPUT    | OUTPUT    |          |          |
|      |            | (00h-FFh) | INVERTED  |          |          |
|      |            |           | DATA      |          |          |
|      |            |           | AFTER     |          |          |
|      |            |           | OUTPUT    |          |          |
|      |            |           | FROM DL-2 |          |          |
|      |            |           | (00h-FFh) |          |          |



FIG.63

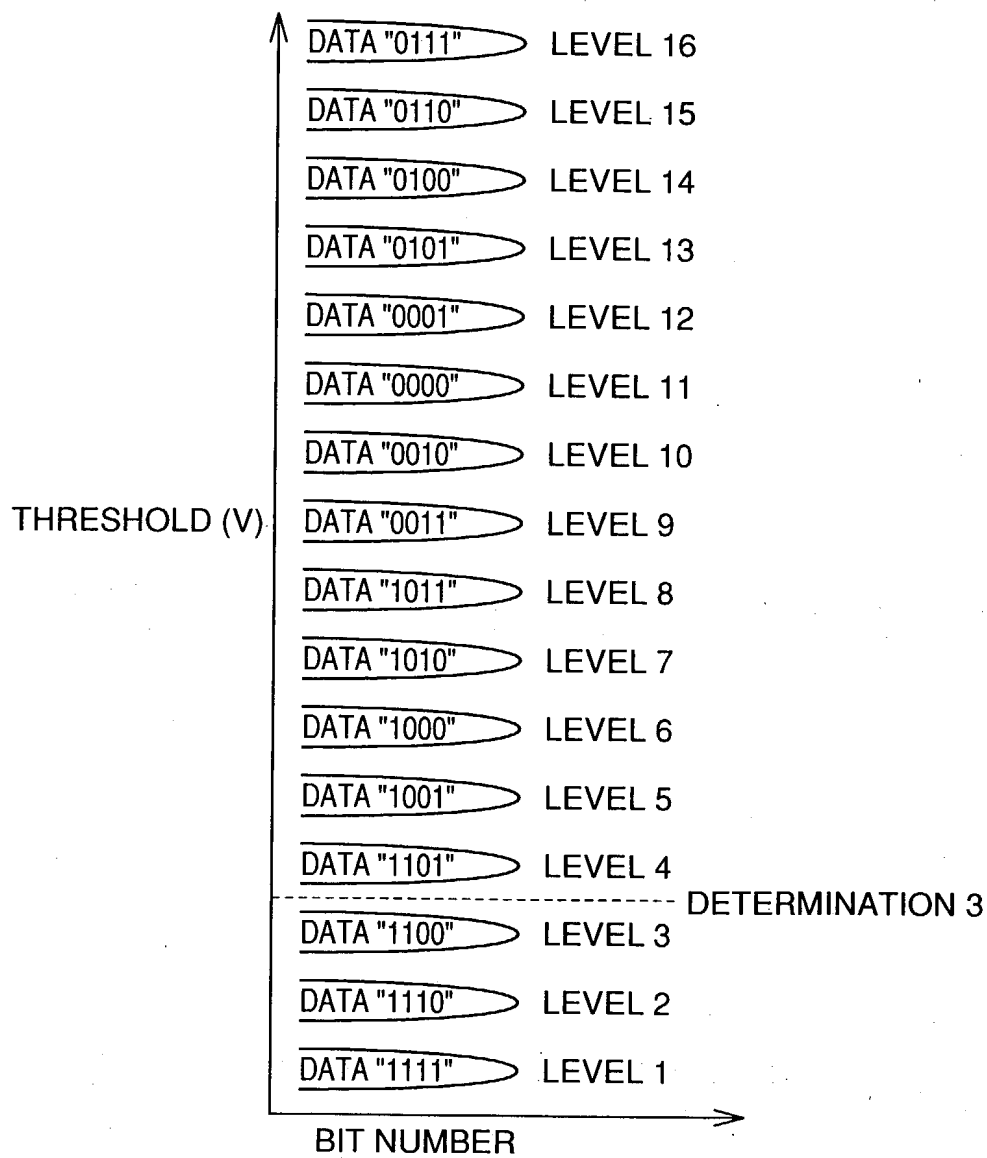


FIG.64

| DATA |           | I/O DATA         | I/O DATA | I/O DATA  | I/O DATA |
|------|-----------|------------------|----------|---|----------|
| 0    |           | 0                | 0        | 0   | 0        |
| 0    |           | 1                | 0        | 1   | 0        |
| 0    | → TO DL-1 | 2                | 0        | 2   | 1        |
| 0    |           | 3                | 0        | 3   | 1        |
| 0    |           | 4                | 0        | 4   | 1        |
| 0    |           | 5                | 0        | 5   | 1        |
| 0    |           | 6                | 0        | 6   | 0        |
| 0    |           | 7                | 0        | 7   | 0        |
| 0    |           | 0                | 0        | 0   | 0        |
| 0    |           | 1                | 0        | 1   | 0        |
| 0    |           | 2                | 0        | 2   | 1        |
| 1    |           | 3                | 1        | 3   | 1        |
| 1    |           | 4                | 1        | 4   | 1        |
| 1    |           | 5                | 1        | 5   | 0        |
| 1    |           | 6                | 1        | 6   | 0        |
| 1    |           | 7                | 1        | 7   | 0        |
| SL   |           | DL-1             | DL-2     | DL-3  | DL-4     |
|      |           | OUTPUT (0Fh-F0h) |          | OUTPUT INVERTED DATA AFTER OUTPUT FROM DL-2 (3Ch-3Ch) |          |



FIG.65

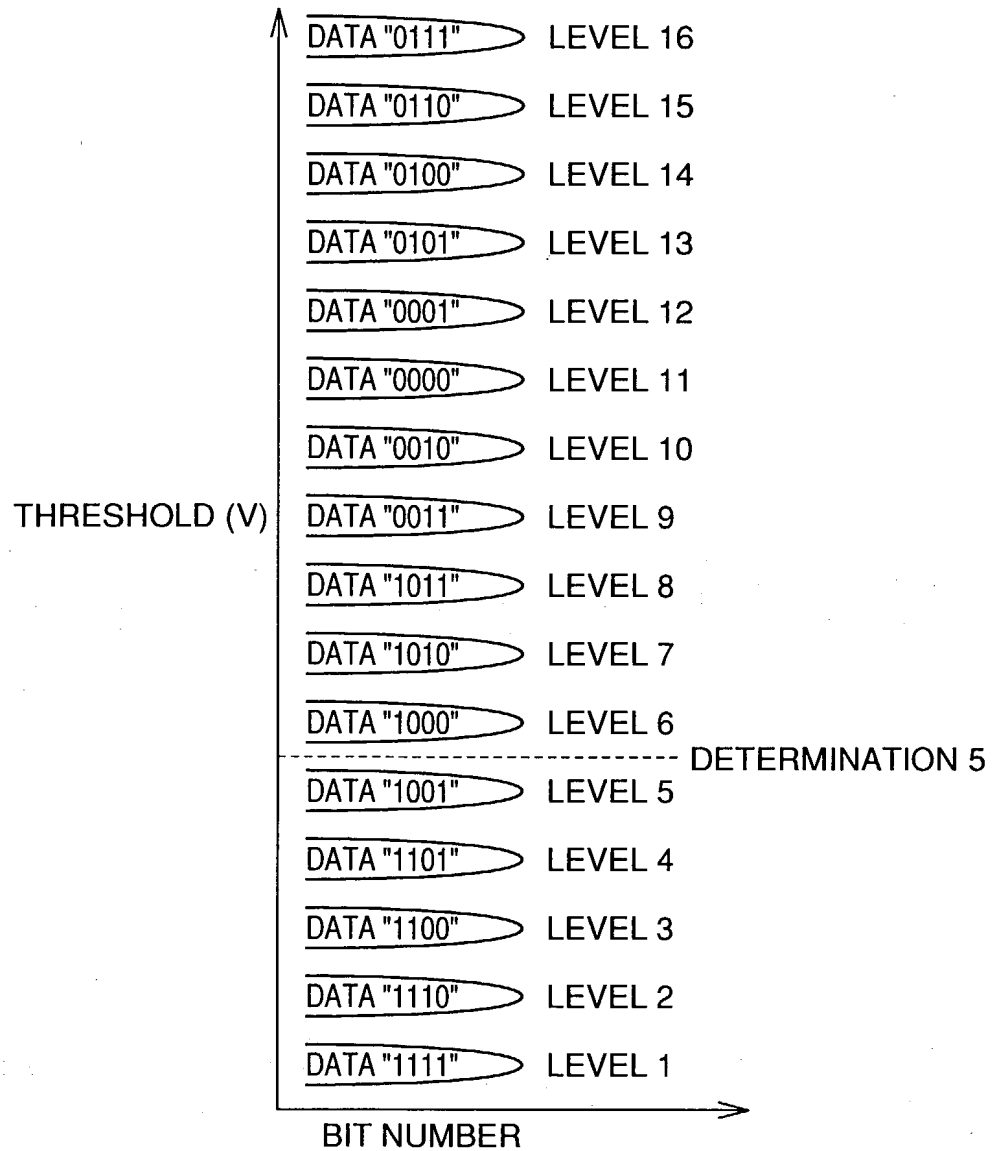






FIG.66

| DATA |            | I/O DATA | I/O DATA  | I/O DATA  | I/O DATA |
|------|------------|----------|-----------|-----------|----------|
| 0    |            | 0        | 0         | 0         | 0        |
| 0    |            | 1        | 0         | 1         | 0        |
| 0    |            | 2        | 0         | 2         | 1        |
| 0    | NOR        | 3        | 0         | 3         | 1        |
| 0    | INVERTED   | 4        | 0         | 4         | 1        |
| 0    | DATA OF SL | 5        | 0         | 5         | 1        |
| 0    | AND DATA   | 6        | 0         | 6         | 0        |
| 0    | OF DL-1    | 7        | 0         | 7         | 0        |
| 0    | TO DL-1    | 0        | 0         | 0         | 0        |
| 0    |            | 1        | 1         | 1         | 0        |
| 1    |            | 2        | 1         | 2         | 1        |
| 1    |            | 3        | 0         | 3         | 1        |
| 1    |            | 4        | 0         | 4         | 1        |
| 1    |            | 5        | 0         | 5         | 1        |
| 1    |            | 6        | 0         | 6         | 0        |
| 1    |            | 7        | 0         | 7         | 0        |
| 1    |            |          |           |           |          |
| SL   |            | DL-1     | DL-2      | DL-3      | DL-4     |
|      |            |          | OUTPUT    | OUTPUT    |          |
|      |            |          | (00h-FFh) | INVERTED  |          |
|      |            |          |           | DATA      |          |
|      |            |          |           | AFTER     |          |
|      |            |          |           | OUTPUT    |          |
|      |            |          |           | FROM DL-2 |          |
|      |            |          |           | (00h-FFh) |          |



FIG.67

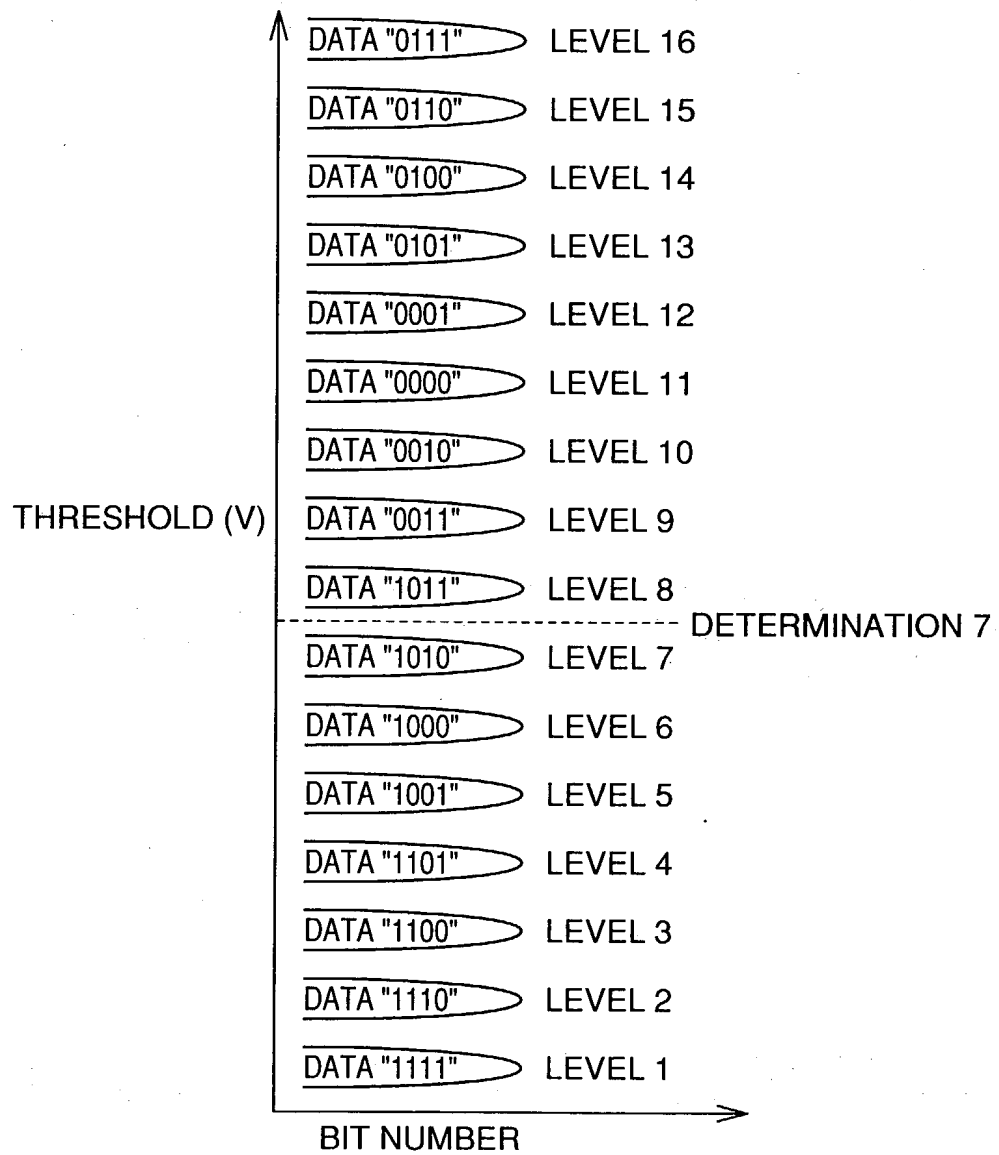




FIG.68

|      |  | OR DATA OF<br>DL-1 AND DL-4<br>TO DL-4 |   |   |   |          |   |          |   |
|------|--|--|---|---|---|----------|---|----------|---|
| DATA |  | I/O DATA                               |   | I/O DATA  |   | I/O DATA |   | I/O DATA |   |
|      |  | 0                                      | 0 | 0   | 0 | 0        | 0 | 0        | 0 |
|      |  | 1                                      | 0 | 1   | 0 | 1        | 0 | 1        | 0 |
|      |  | 2                                      | 0 | 2   | 0 | 2        | 1 | 2        | 0 |
|      |  | 3                                      | 0 | 3   | 0 | 3        | 1 | 3        | 0 |
|      |  | 4                                      | 0 | 4   | 1 | 4        | 1 | 4        | 0 |
|      |  | 5                                      | 0 | 5   | 1 | 5        | 1 | 5        | 0 |
|      |  | 6                                      | 0 | 6   | 1 | 6        | 0 | 6        | 0 |
|      |  | 7                                      | 0 | 7   | 1 | 7        | 0 | 7        | 0 |
|      |  | 0                                      | 0 | 0   | 1 | 0        | 0 | 0        | 0 |
|      |  | 1                                      | 1 | 1   | 1 | 1        | 0 | 1        | 1 |
|      |  | 2                                      | 1 | 2   | 1 | 2        | 1 | 2        | 1 |
|      |  | 3                                      | 0 | 3   | 1 | 3        | 1 | 3        | 0 |
|      |  | 4                                      | 0 | 4   | 0 | 4        | 1 | 4        | 0 |
|      |  | 5                                      | 0 | 5   | 0 | 5        | 1 | 5        | 1 |
|      |  | 6                                      | 0 | 6   | 0 | 6        | 0 | 6        | 1 |
|      |  | 7                                      | 0 | 7   | 0 | 7        | 0 | 7        | 0 |
| SL   |  | DL-1                                   |   | DL-2  |   | DL-3     |   | DL-4     |   |
|      |  | OUTPUT<br>(0Fh-F0h)                    |   | OUTPUT<br>INVERTED<br>DATA<br>AFTER<br>OUTPUT<br>FROM DL-2<br>(3Ch-3Ch) |   |          |   |          |   |

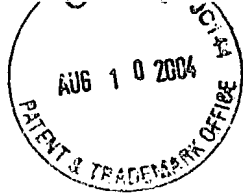


FIG.69

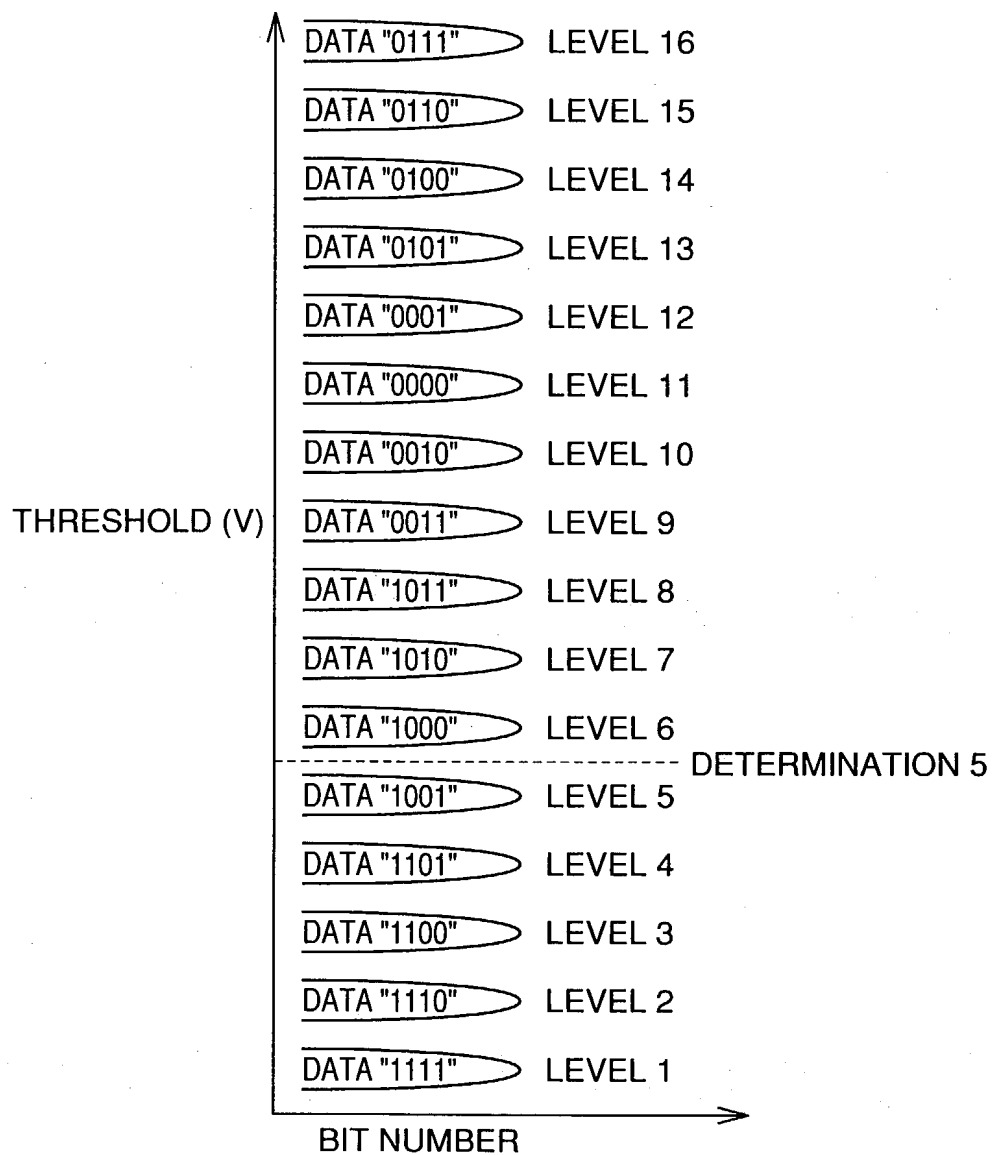


FIG.70

| DATA |           | I/O DATA         | I/O DATA | I/O DATA  | I/O DATA |
|------|-----------|------------------|----------|---|----------|
| 0    |           | 0                | 0        | 0   | 0        |
| 0    |           | 1                | 0        | 1   | 0        |
| 0    | → TO DL-1 | 2                | 0        | 2   | 1        |
| 0    |           | 3                | 0        | 3   | 1        |
| 0    |           | 4                | 0        | 4   | 1        |
| 0    |           | 5                | 0        | 5   | 1        |
| 0    |           | 6                | 0        | 6   | 0        |
| 1    |           | 7                | 1        | 7   | 0        |
| 1    |           | 0                | 1        | 0   | 0        |
| 1    |           | 1                | 1        | 1   | 0        |
| 1    |           | 2                | 1        | 2   | 1        |
| 1    |           | 3                | 1        | 3   | 1        |
| 1    |           | 4                | 1        | 4   | 0        |
| 1    |           | 5                | 1        | 5   | 1        |
| 1    |           | 6                | 1        | 6   | 0        |
| 1    |           | 7                | 1        | 7   | 0        |
| SL   |           | DL-1             | DL-2     | DL-3  | DL-4     |
|      |           | OUTPUT (00h-FFh) |          | OUTPUT INVERTED DATA AFTER OUTPUT FROM DL-2 (00h-FFh) |          |



FIG.71

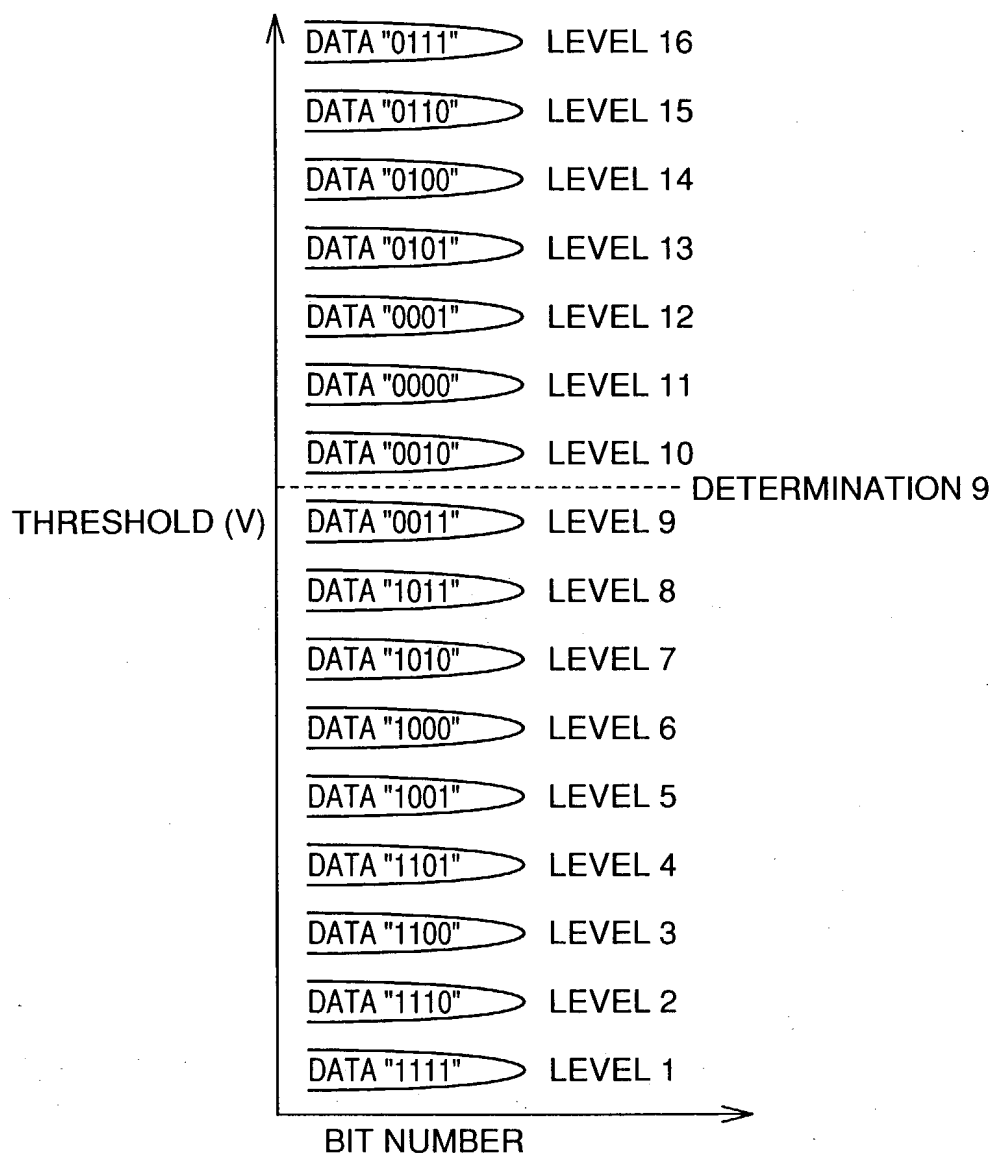


FIG.72

| DATA |            | I/O DATA | I/O DATA  | I/O DATA  | I/O DATA |
|------|------------|----------|-----------|-----------|----------|
| 0    |            | 0        | 0         | 0         | 0        |
| 0    |            | 1        | 0         | 1         | 0        |
| 0    |            | 2        | 0         | 2         | 1        |
| 0    | NOR        | 3        | 0         | 3         | 1        |
| 0    | INVERTED   | 4        | 0         | 4         | 1        |
| 1    | DATA OF SL | 5        | 1         | 5         | 1        |
| 1    | AND DATA   | 6        | 1         | 6         | 0        |
| 1    | OF DL-1    | 7        | 0         | 7         | 0        |
| 1    | TO DL-1    | 0        | 0         | 0         | 0        |
| 1    |            | 1        | 0         | 1         | 0        |
| 1    |            | 2        | 0         | 2         | 1        |
| 1    |            | 3        | 0         | 3         | 1        |
| 1    |            | 4        | 0         | 4         | 1        |
| 1    |            | 5        | 0         | 5         | 1        |
| 1    |            | 6        | 0         | 6         | 0        |
| 1    |            | 7        | 0         | 7         | 0        |
| 1    |            |          |           |           |          |
| SL   |            | DL-1     | DL-2      | DL-3      | DL-4     |
|      |            |          | OUTPUT    | OUTPUT    |          |
|      |            |          | (00h-FFh) | INVERTED  |          |
|      |            |          |           | DATA      |          |
|      |            |          |           | AFTER     |          |
|      |            |          |           | OUTPUT    |          |
|      |            |          |           | FROM DL-2 |          |
|      |            |          |           | (00h-FFh) |          |



FIG.73

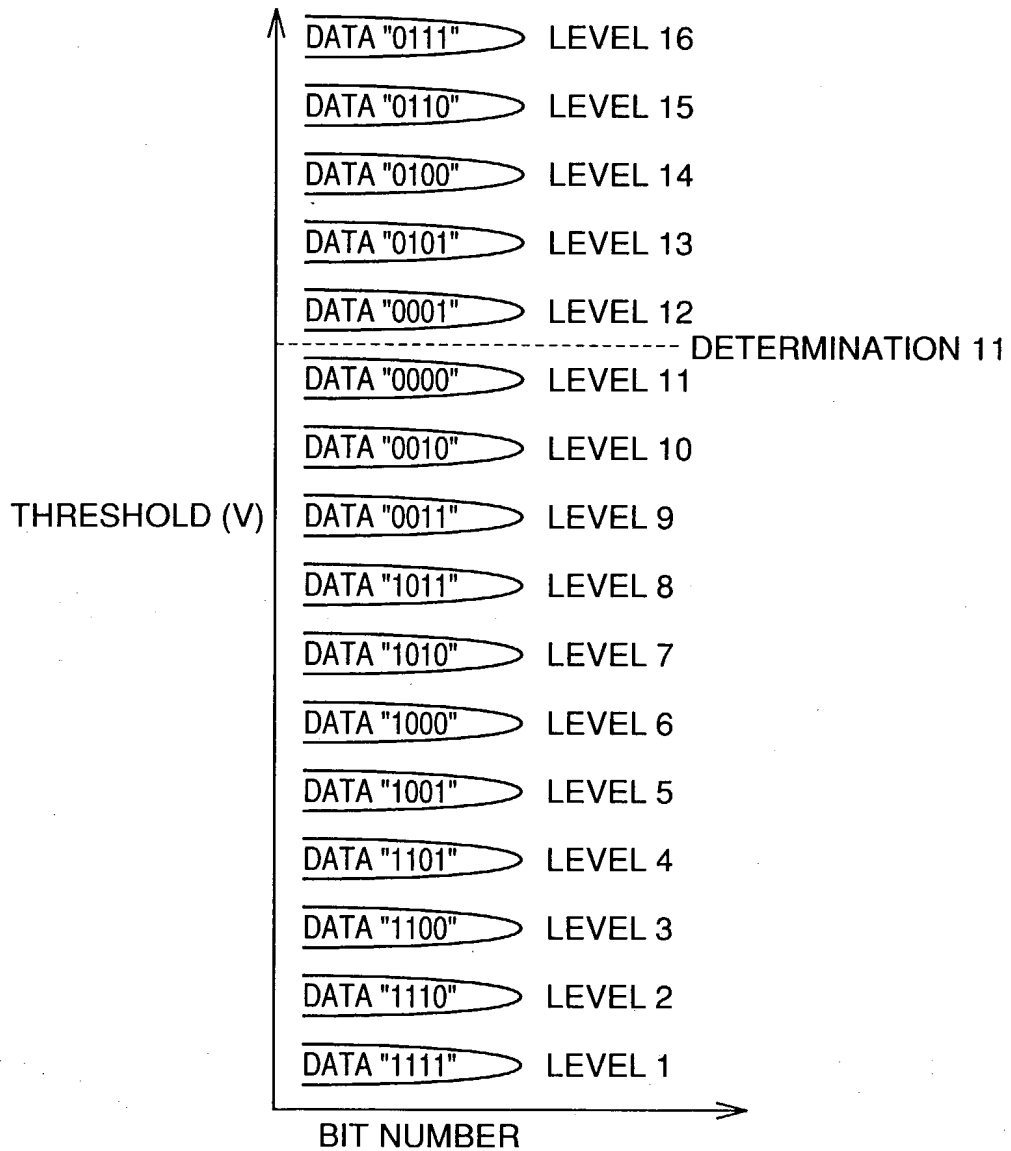






FIG.74

| OR DATA OF DL-1 AND DL-4<br>TO DL-4 |          |   |          |          |
|-------------------------------------|----------|---|----------|----------|
| DATA                                | I/O DATA | I/O DATA  | I/O DATA | I/O DATA |
|                                     | 0        | 0   | 0        | 0        |
|                                     | 1        | 0   | 1        | 0        |
|                                     | 2        | 0   | 2        | 0        |
|                                     | 3        | 0   | 3        | 0        |
|                                     | 4        | 0   | 4        | 0        |
|                                     | 5        | 1   | 5        | 1        |
|                                     | 6        | 1   | 6        | 1        |
|                                     | 7        | 0   | 7        | 0        |
|                                     | 0        | 0   | 0        | 0        |
|                                     | 1        | 0   | 1        | 1        |
|                                     | 2        | 0   | 2        | 1        |
|                                     | 3        | 0   | 3        | 0        |
|                                     | 4        | 0   | 4        | 0        |
|                                     | 5        | 0   | 5        | 1        |
|                                     | 6        | 0   | 6        | 1        |
|                                     | 7        | 0   | 7        | 0        |
| SL                                  | DL-1     | DL-2  | DL-3     | DL-4     |
| OUTPUT<br>(0Fh-F0h)                 |          | OUTPUT<br>INVERTED<br>DATA<br>AFTER<br>OUTPUT<br>FROM DL-2<br>(3Ch-3Ch) |          |          |



FIG.75

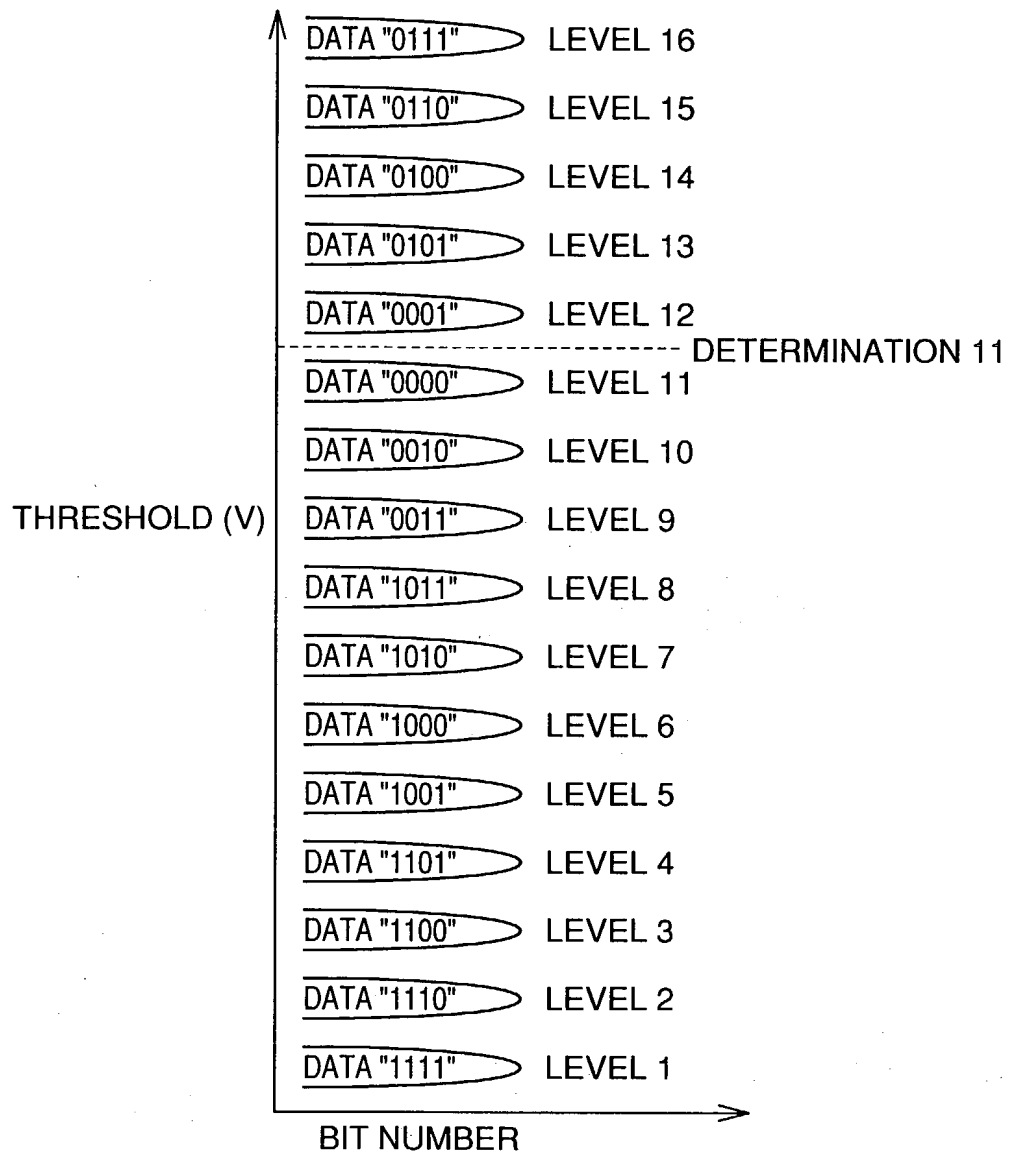


FIG.76

| DATA |           | I/O DATA | I/O DATA         | I/O DATA  | I/O DATA |
|------|-----------|----------|------------------|---|----------|
| 0    |           | 0        | 0                | 0   | 0        |
| 0    |           | 1        | 0                | 1   | 0        |
| 0    | → TO DL-1 | 2        | 0                | 2   | 1        |
| 1    |           | 3        | 1                | 3   | 1        |
| 1    |           | 4        | 1                | 4   | 1        |
| 1    |           | 5        | 1                | 5   | 1        |
| 1    |           | 6        | 1                | 6   | 0        |
| 1    |           | 7        | 1                | 7   | 0        |
| 1    |           | 0        | 1                | 0   | 0        |
| 1    |           | 1        | 1                | 1   | 0        |
| 1    |           | 2        | 1                | 2   | 1        |
| 1    |           | 3        | 1                | 3   | 1        |
| 1    |           | 4        | 1                | 4   | 1        |
| 1    |           | 5        | 1                | 5   | 1        |
| 1    |           | 6        | 1                | 6   | 0        |
| 1    |           | 7        | 1                | 7   | 0        |
| SL   |           | DL-1     | DL-2             | DL-3  | DL-4     |
|      |           |          | OUTPUT (00h-FFh) | OUTPUT INVERTED DATA AFTER OUTPUT FROM DL-2 (00h-FFh) |          |



FIG.77

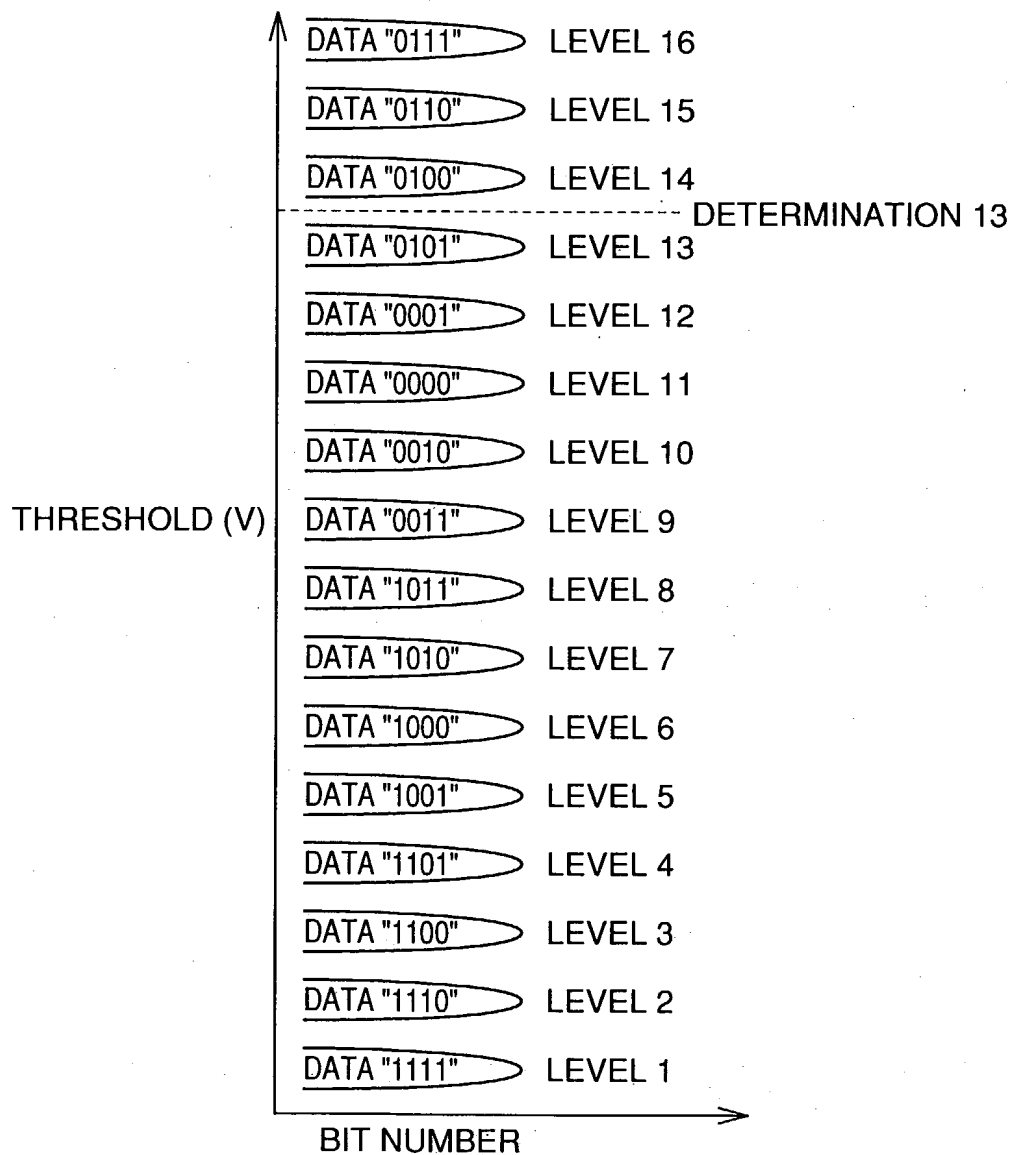




FIG.78

OR DATA OF DL-1 AND DL-4  
TO DL-4

| DATA |            | I/O DATA | I/O DATA | I/O DATA | I/O DATA |
|------|------------|----------|----------|----------|----------|
| 0    |            | 0        | 0        | 0        | 0        |
| 1    |            | 1        | 1        | 1        | 0        |
| 1    | →          | 2        | 1        | 2        | 0        |
| 1    | NOR        | 3        | 0        | 3        | 0        |
| 1    | INVERTED   | 4        | 0        | 4        | 1        |
| 1    | DATA OF SL | 5        | 0        | 5        | 1        |
| 1    | AND DATA   | 6        | 0        | 6        | 0        |
| 1    | OF DL-1    | 7        | 0        | 7        | 0        |
| 1    | TO DL-1    | 0        | 0        | 0        | 0        |
| 1    |            | 1        | 0        | 1        | 1        |
| 1    |            | 2        | 0        | 2        | 1        |
| 1    |            | 3        | 0        | 3        | 1        |
| 1    |            | 4        | 0        | 4        | 1        |
| 1    |            | 5        | 0        | 5        | 1        |
| 1    |            | 6        | 0        | 6        | 0        |
| 1    |            | 7        | 0        | 7        | 0        |
| SL   |            | DL-1     | DL-2     | DL-3     | DL-4     |

OUTPUT (0Fh-F0h)    OUTPUT INVERTED DATA AFTER OUTPUT FROM DL-2 (3Ch-3Ch)



FIG.79

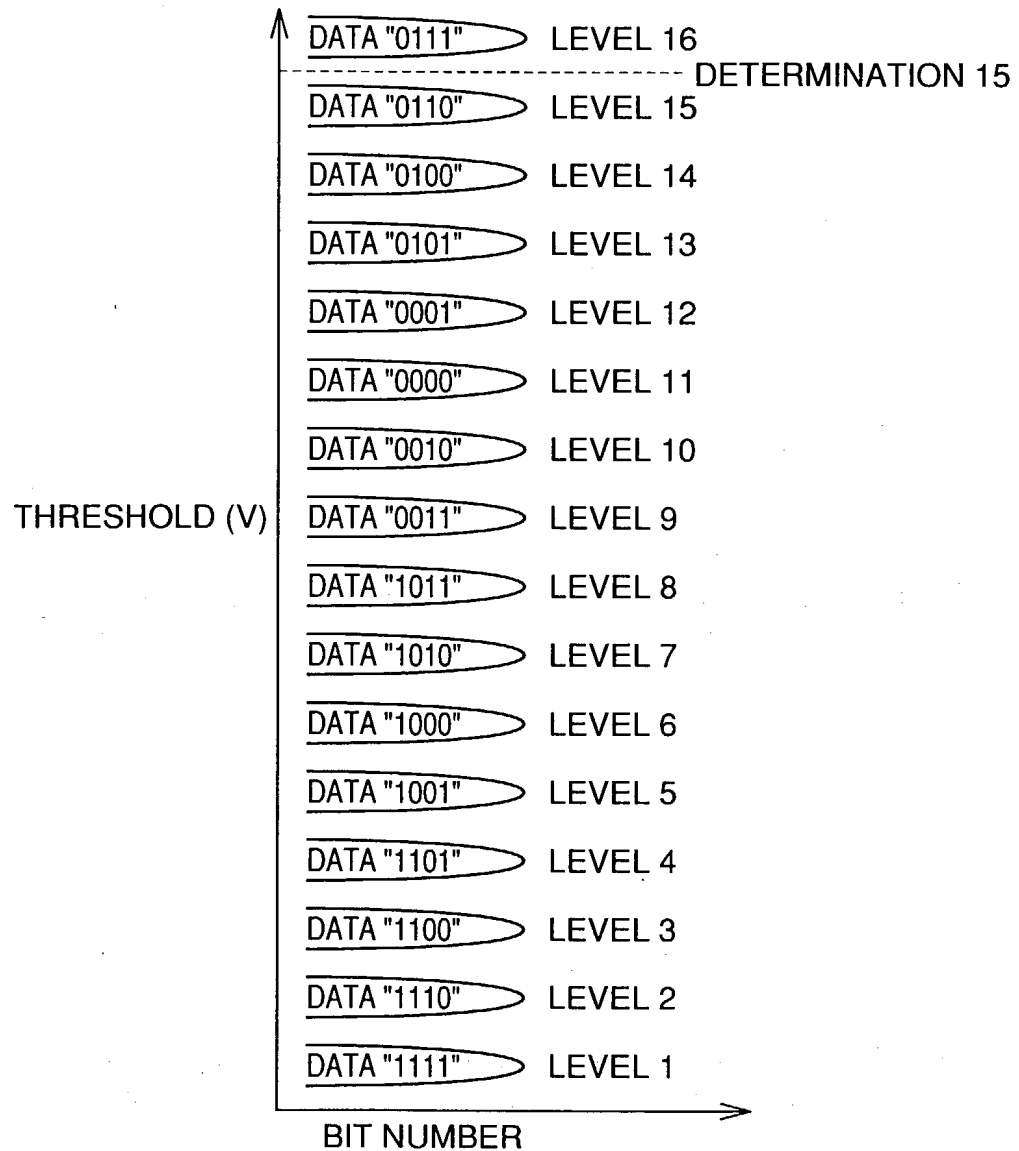


FIG.80

| OR DATA OF DL-1 AND DL-4<br>TO DL-4 |  |                     |          |   |          |   |   |   |
|-------------------------------------|--|---------------------|----------|---|----------|---|---|---|
| DATA                                |  | I/O DATA            | I/O DATA | I/O DATA  | I/O DATA |   |   |   |
|                                     |  | 0                   | 0        | 0   | 0        | 0 | 0 | 0 |
|                                     |  | 1                   | 1        | 1   | 0        | 1 | 0 | 1 |
|                                     |  | 2                   | 1        | 2   | 0        | 2 | 1 | 1 |
|                                     |  | 3                   | 0        | 3   | 0        | 3 | 1 | 0 |
|                                     |  | 4                   | 0        | 4   | 1        | 4 | 1 | 0 |
|                                     |  | 5                   | 0        | 5   | 1        | 5 | 1 | 1 |
|                                     |  | 6                   | 0        | 6   | 1        | 6 | 0 | 1 |
|                                     |  | 7                   | 0        | 7   | 1        | 7 | 0 | 0 |
|                                     |  | 0                   | 0        | 0   | 1        | 0 | 0 | 0 |
|                                     |  | 1                   | 0        | 1   | 1        | 1 | 0 | 1 |
|                                     |  | 2                   | 0        | 2   | 1        | 2 | 1 | 1 |
|                                     |  | 3                   | 0        | 3   | 1        | 3 | 1 | 0 |
|                                     |  | 4                   | 0        | 4   | 0        | 4 | 1 | 0 |
|                                     |  | 5                   | 0        | 5   | 0        | 5 | 1 | 1 |
|                                     |  | 6                   | 0        | 6   | 0        | 6 | 0 | 1 |
|                                     |  | 7                   | 0        | 7   | 0        | 7 | 0 | 0 |
| SL                                  |  | DL-1                | DL-2     | DL-3  | DL-4     |   |   |   |
|                                     |  | OUTPUT<br>(0Fh-F0h) |          | OUTPUT<br>INVERTED<br>DATA<br>AFTER<br>OUTPUT<br>FROM DL-2<br>(3Ch-3Ch) |          |   |   |   |

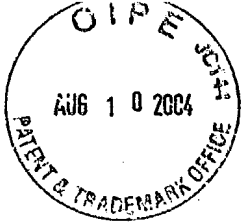


FIG.81

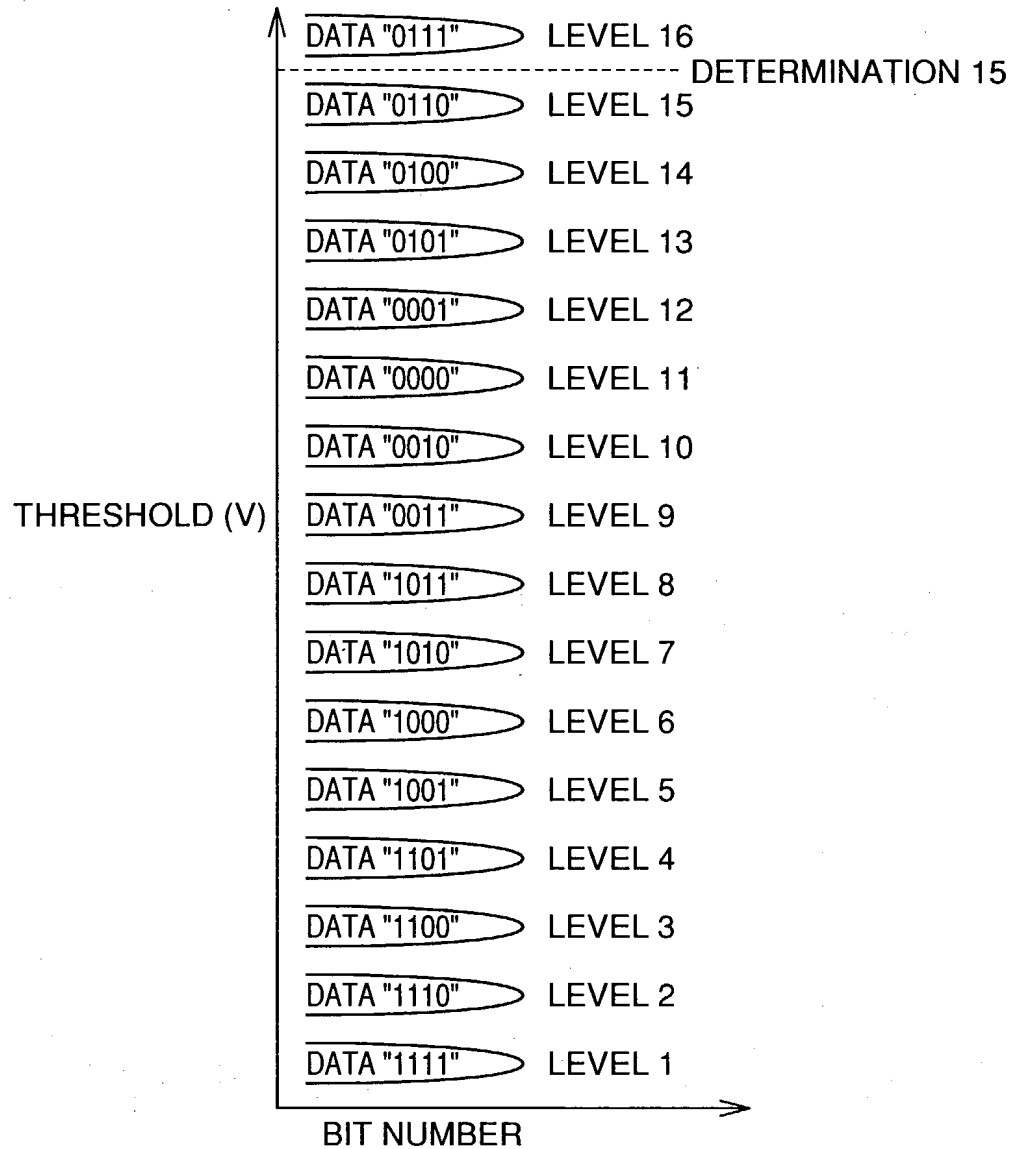
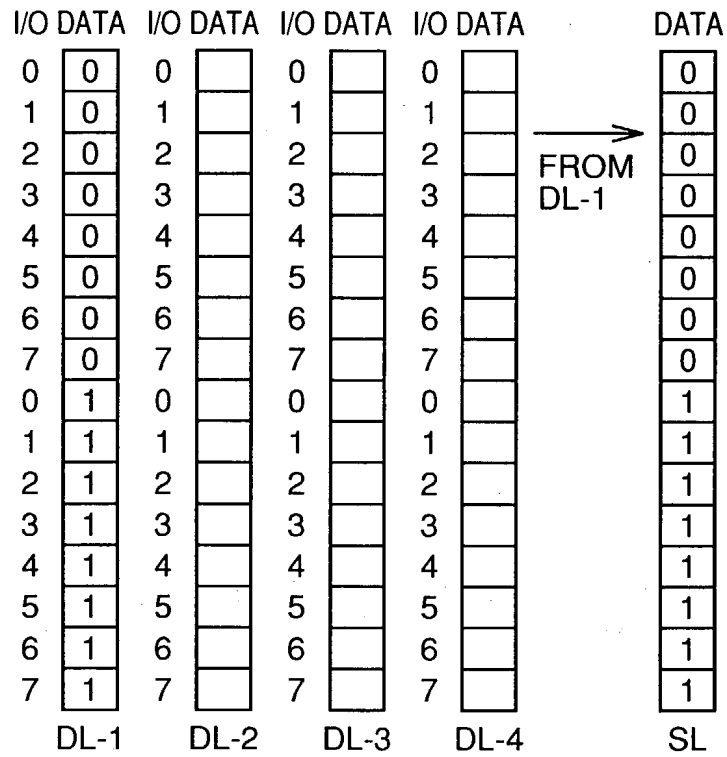






FIG.82



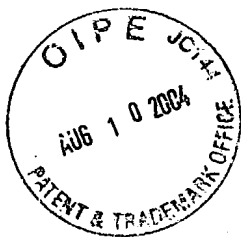


FIG.83

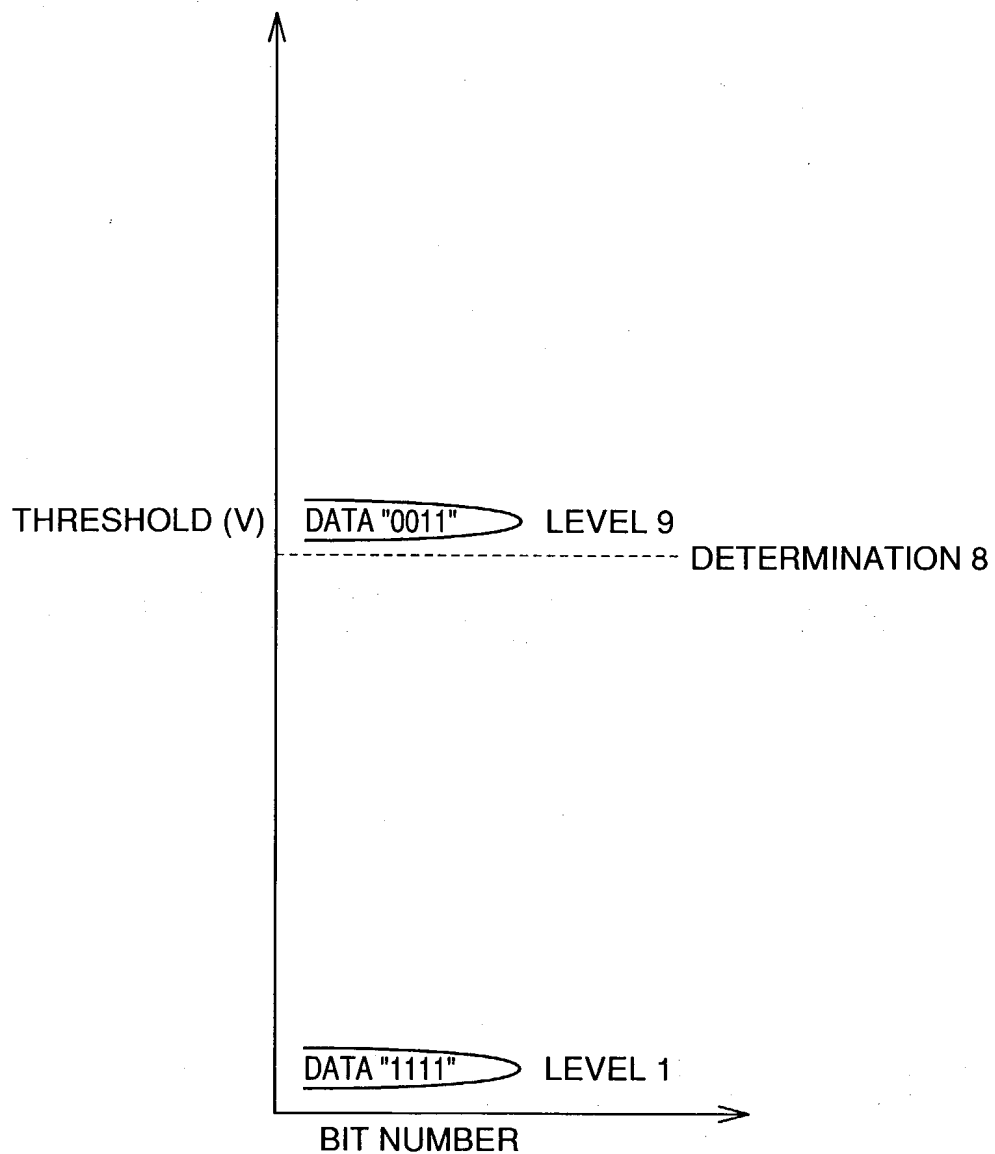


FIG.84

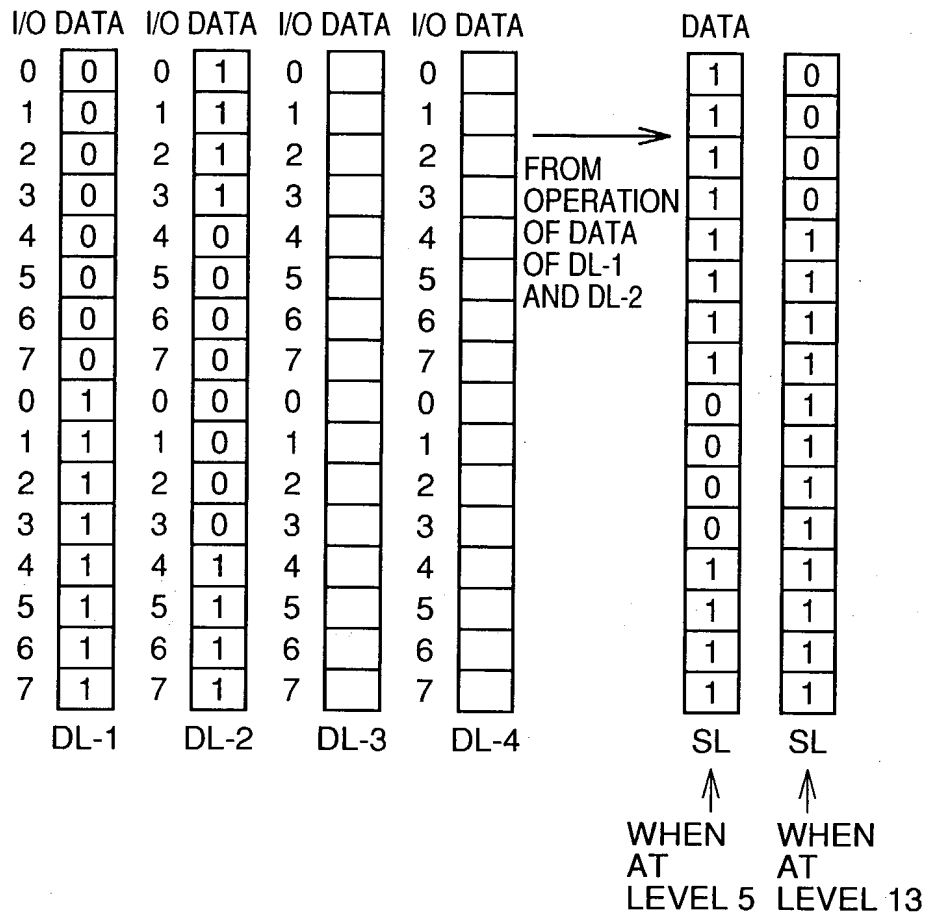
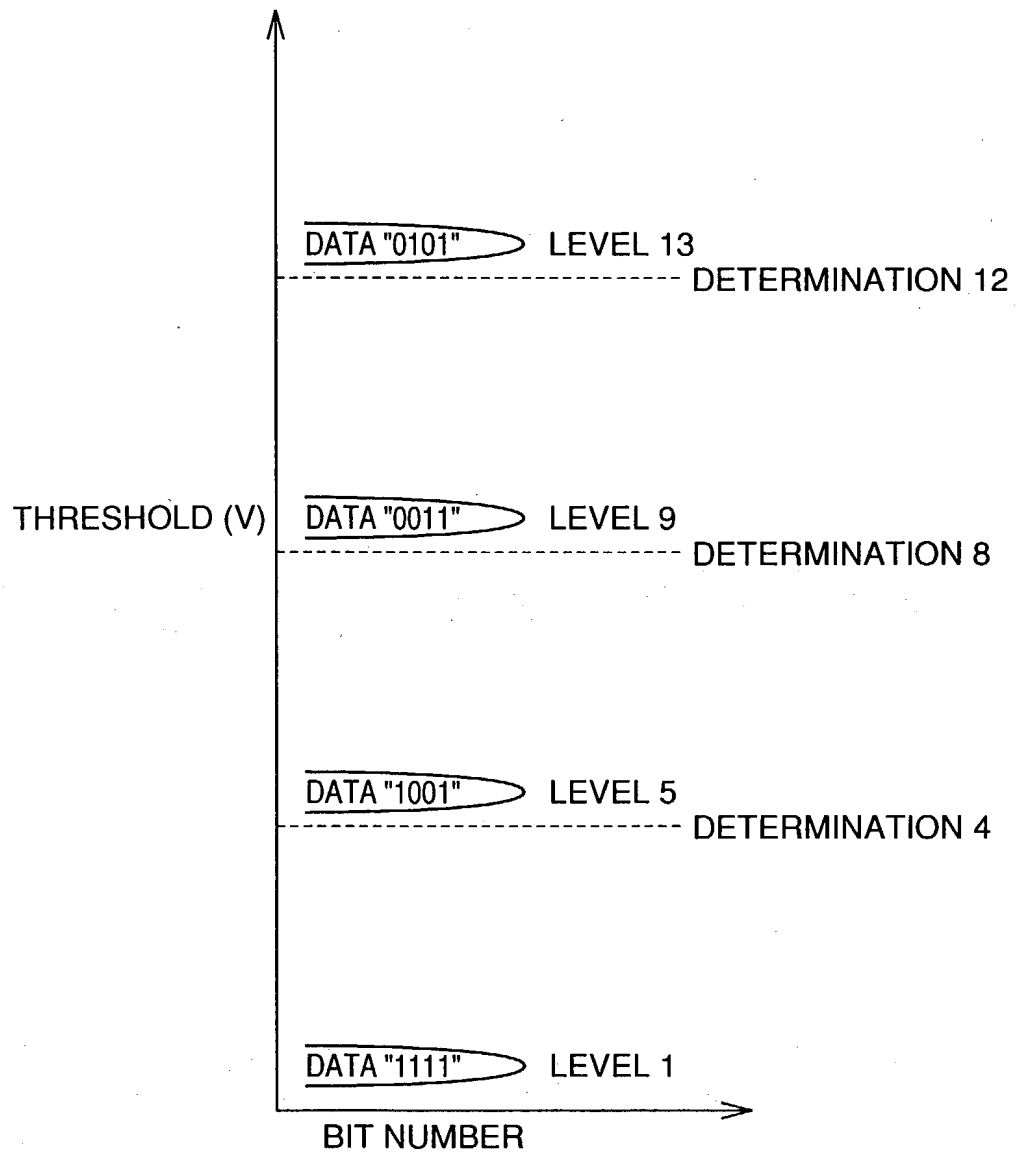




FIG.85



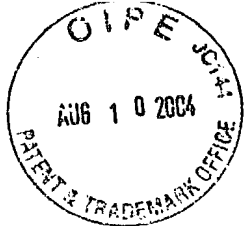


FIG.86

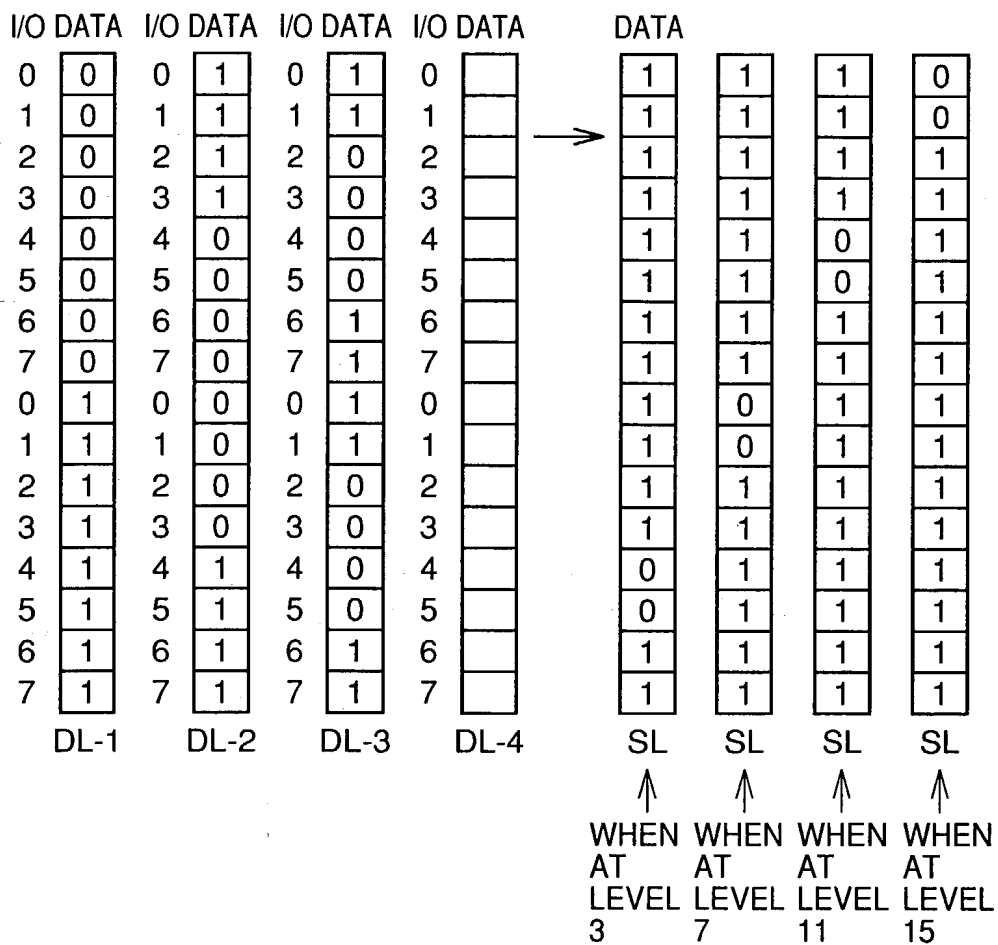




FIG.87

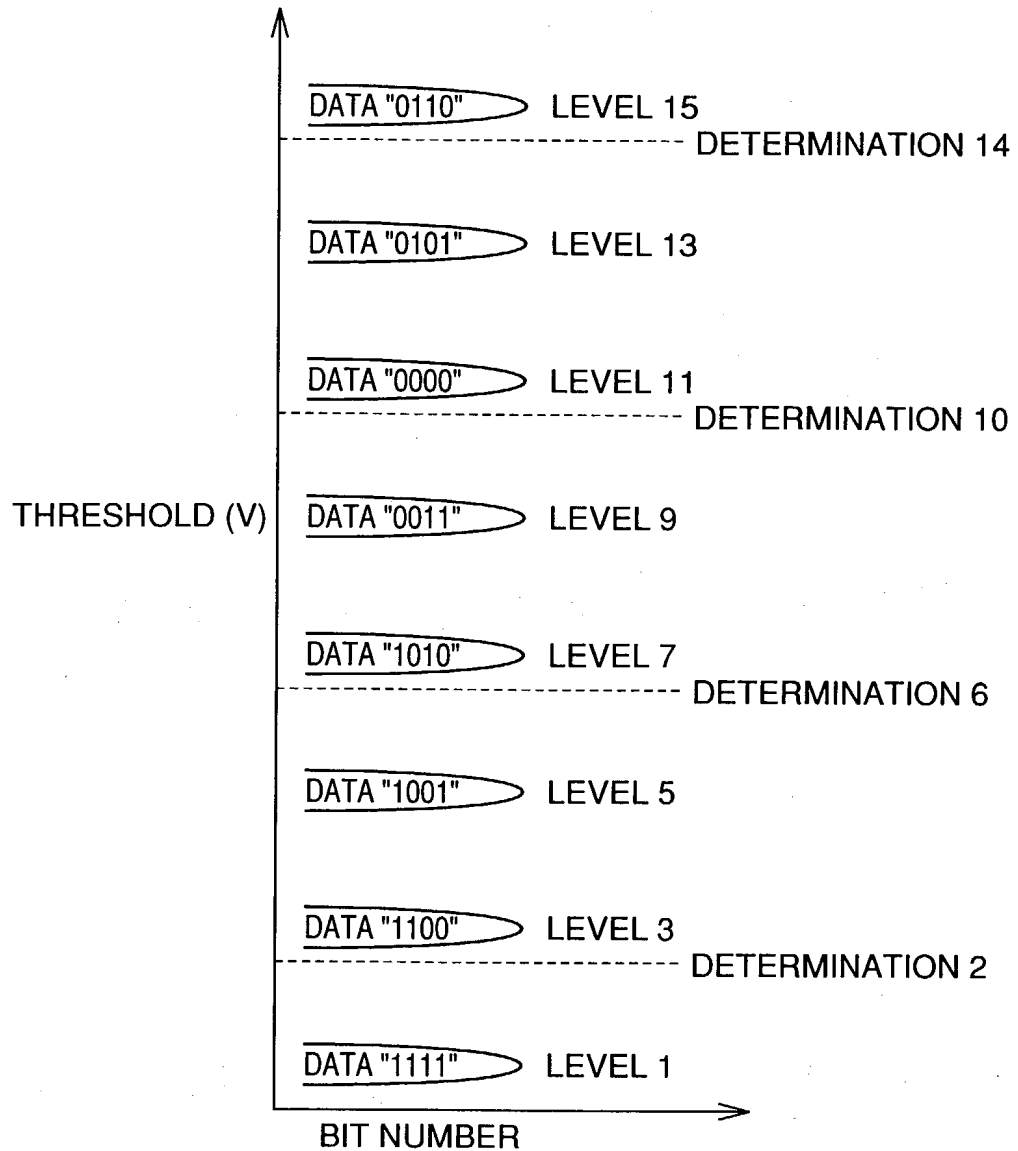






FIG.89

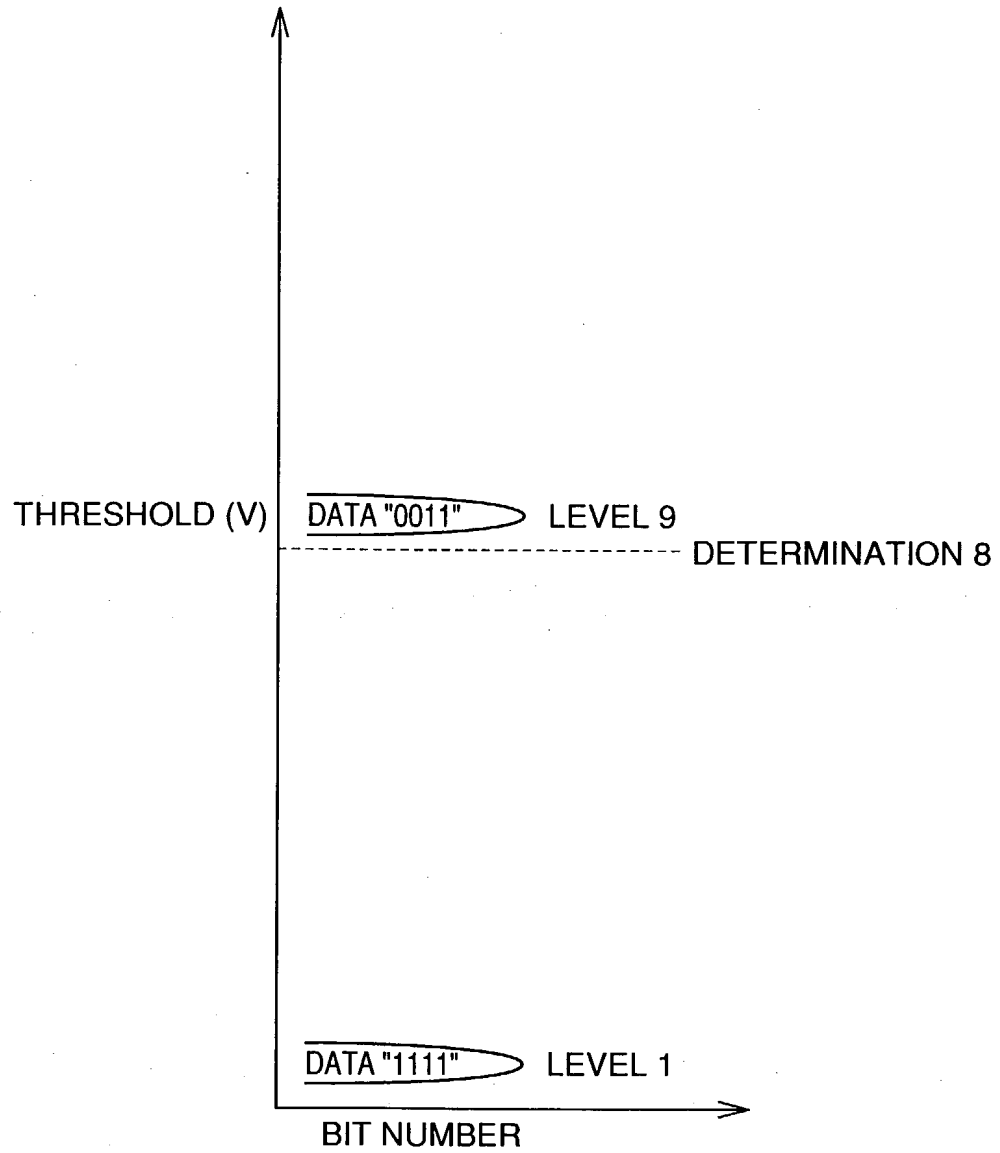




FIG.90

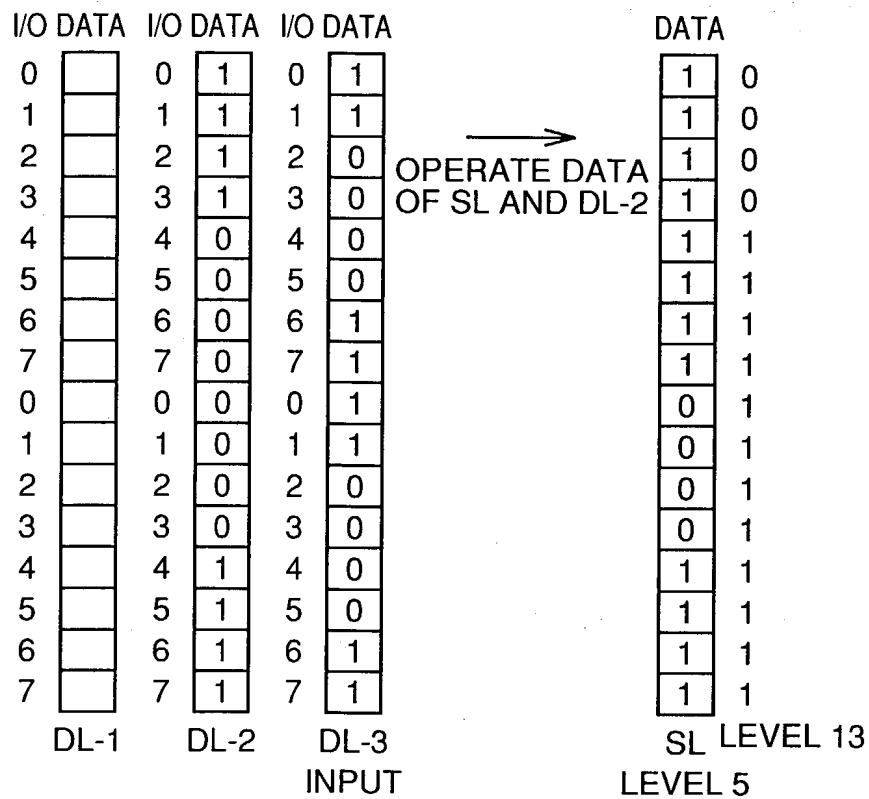


FIG.91

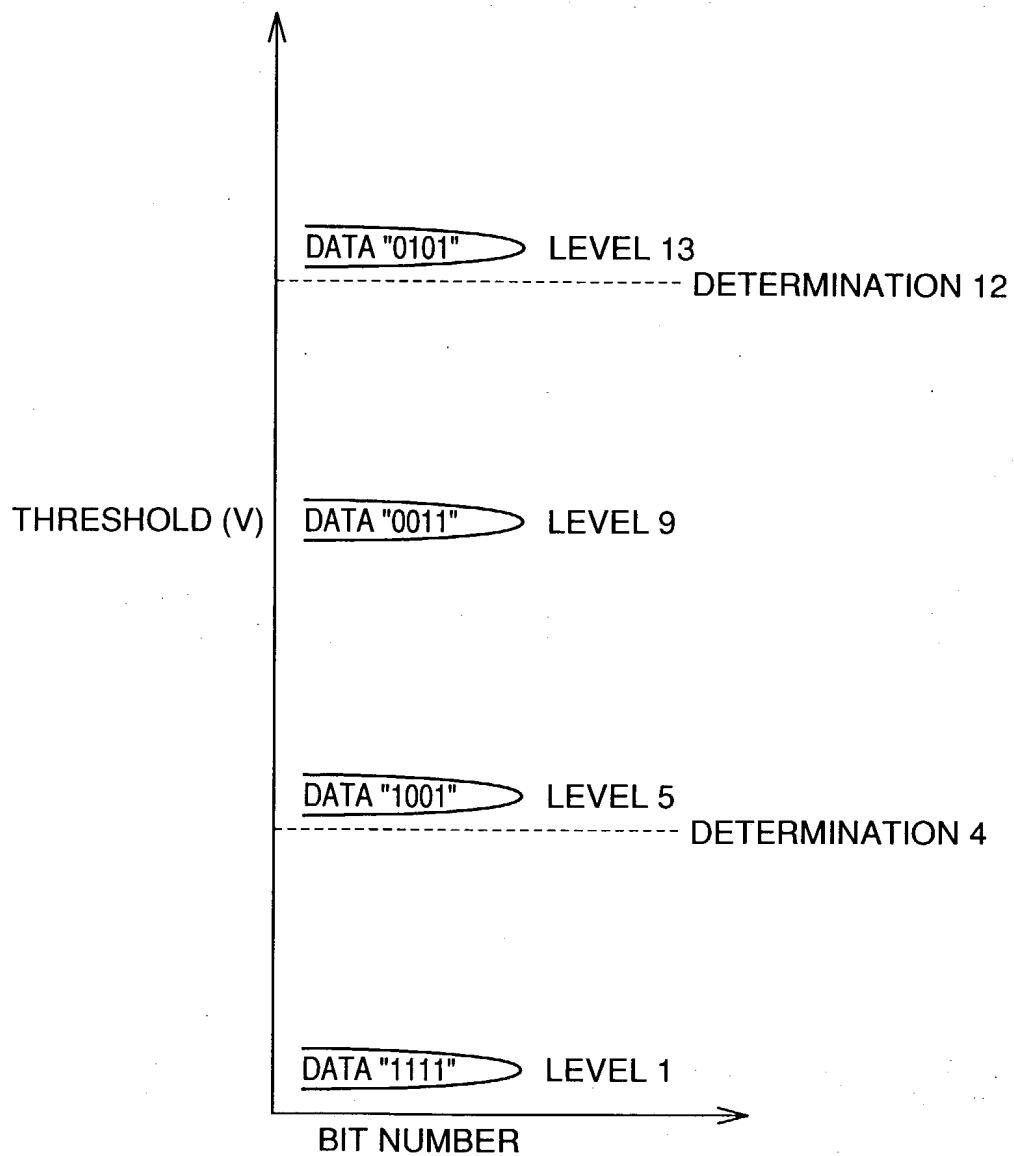
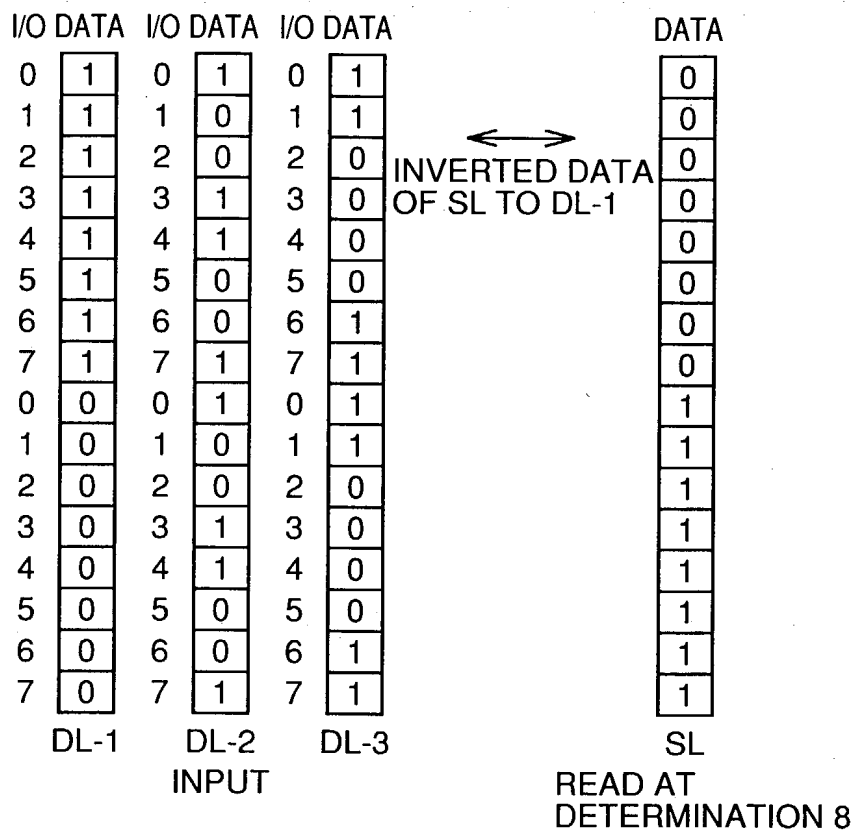


FIG.92



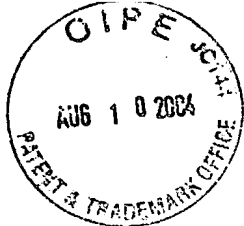


FIG.93

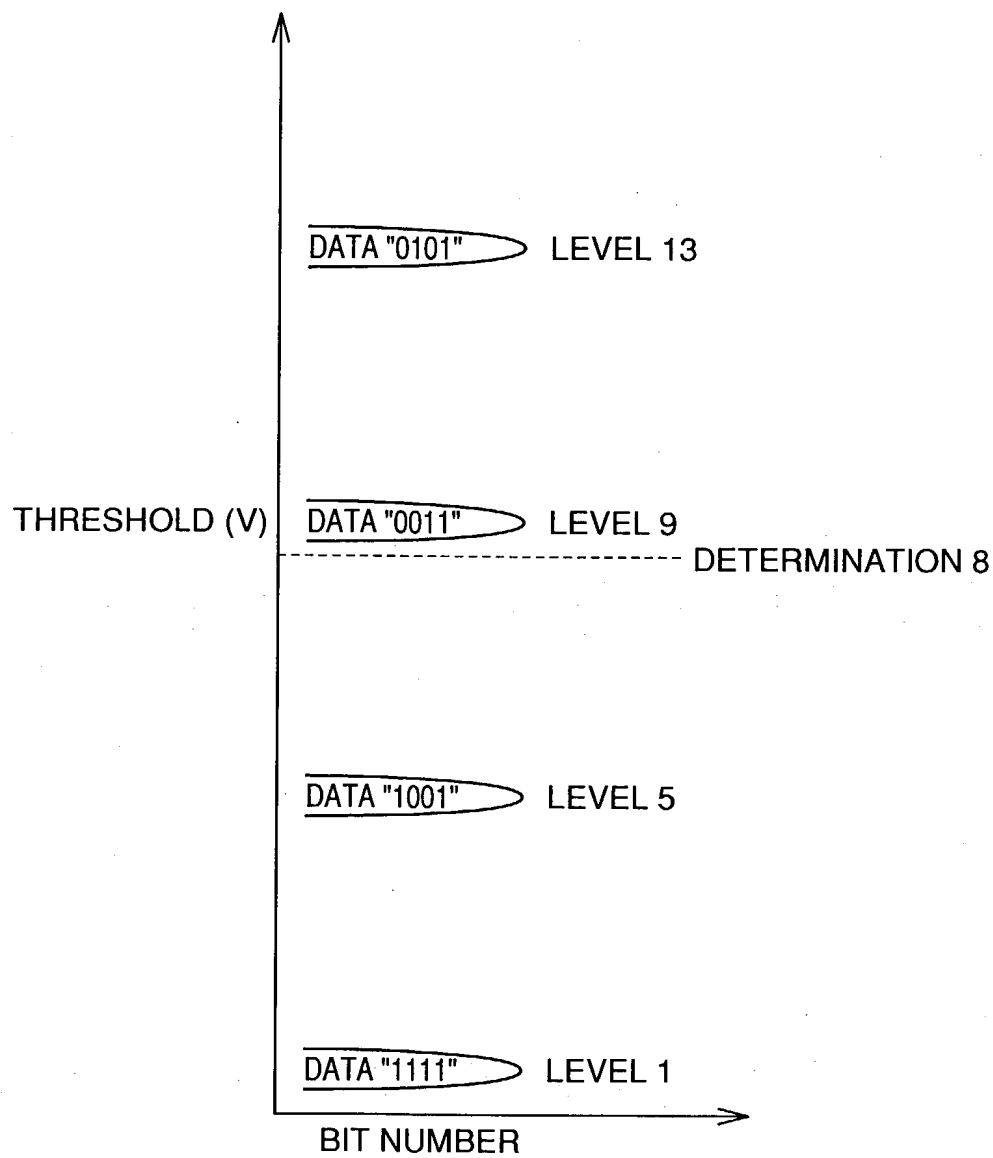
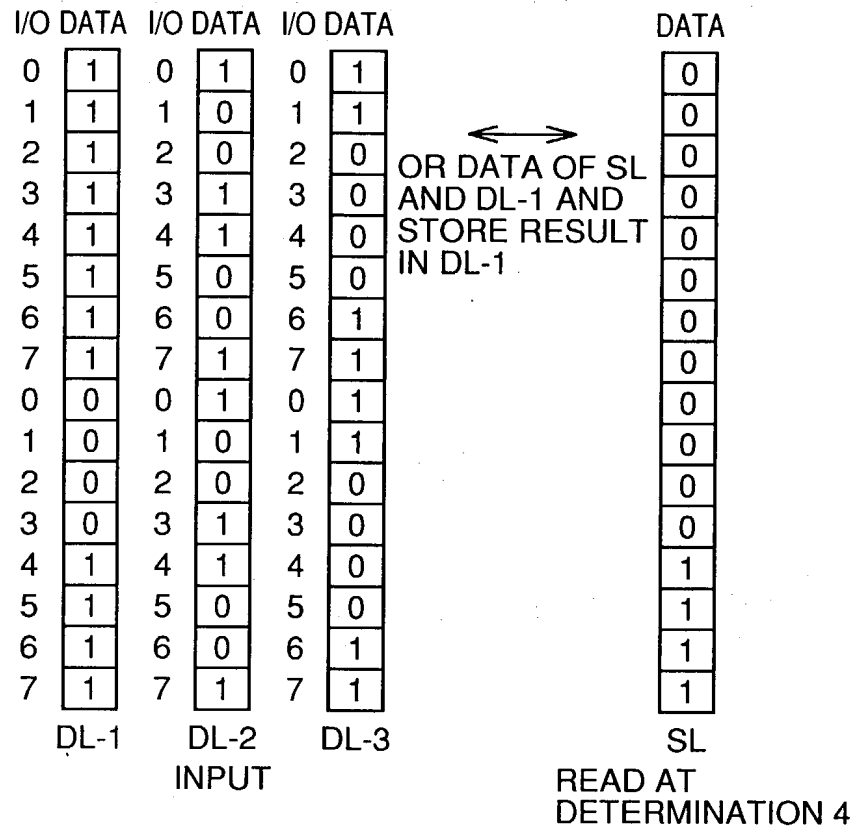


FIG.94



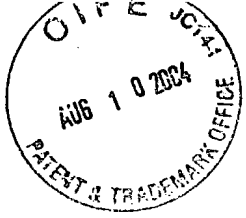


FIG.95

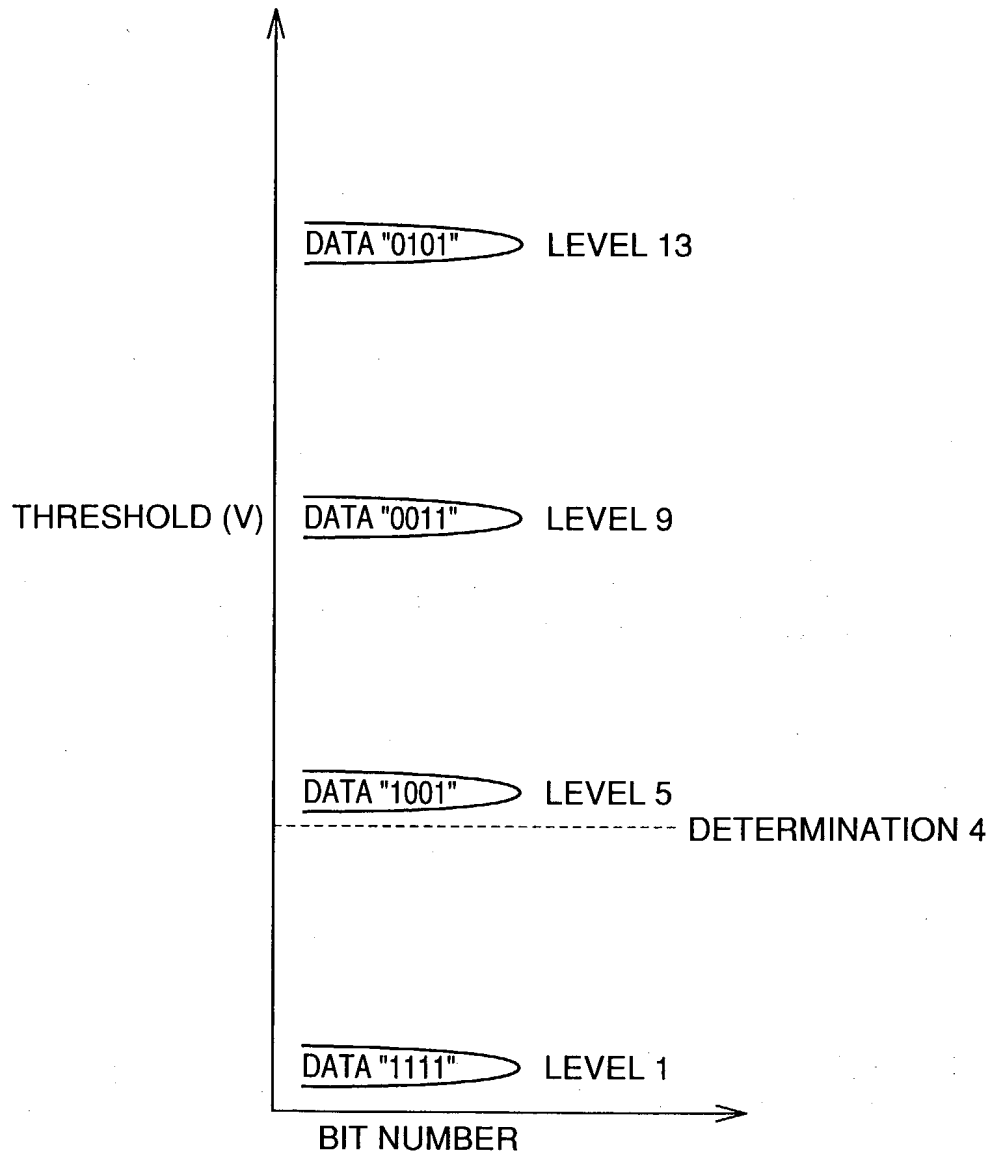
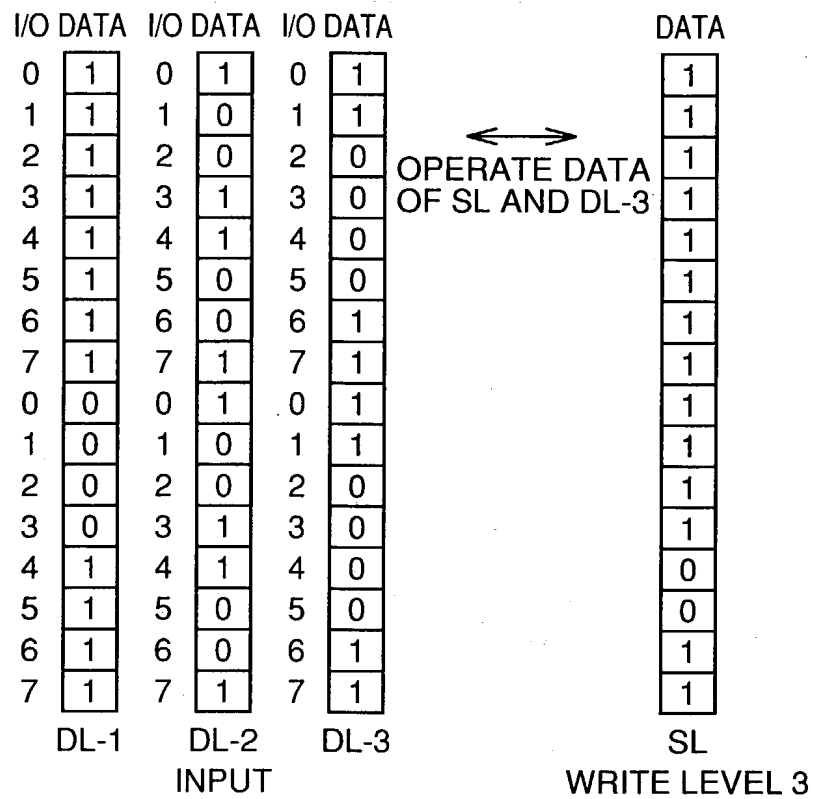


FIG.96



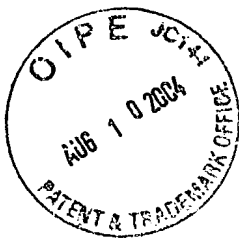


FIG.97

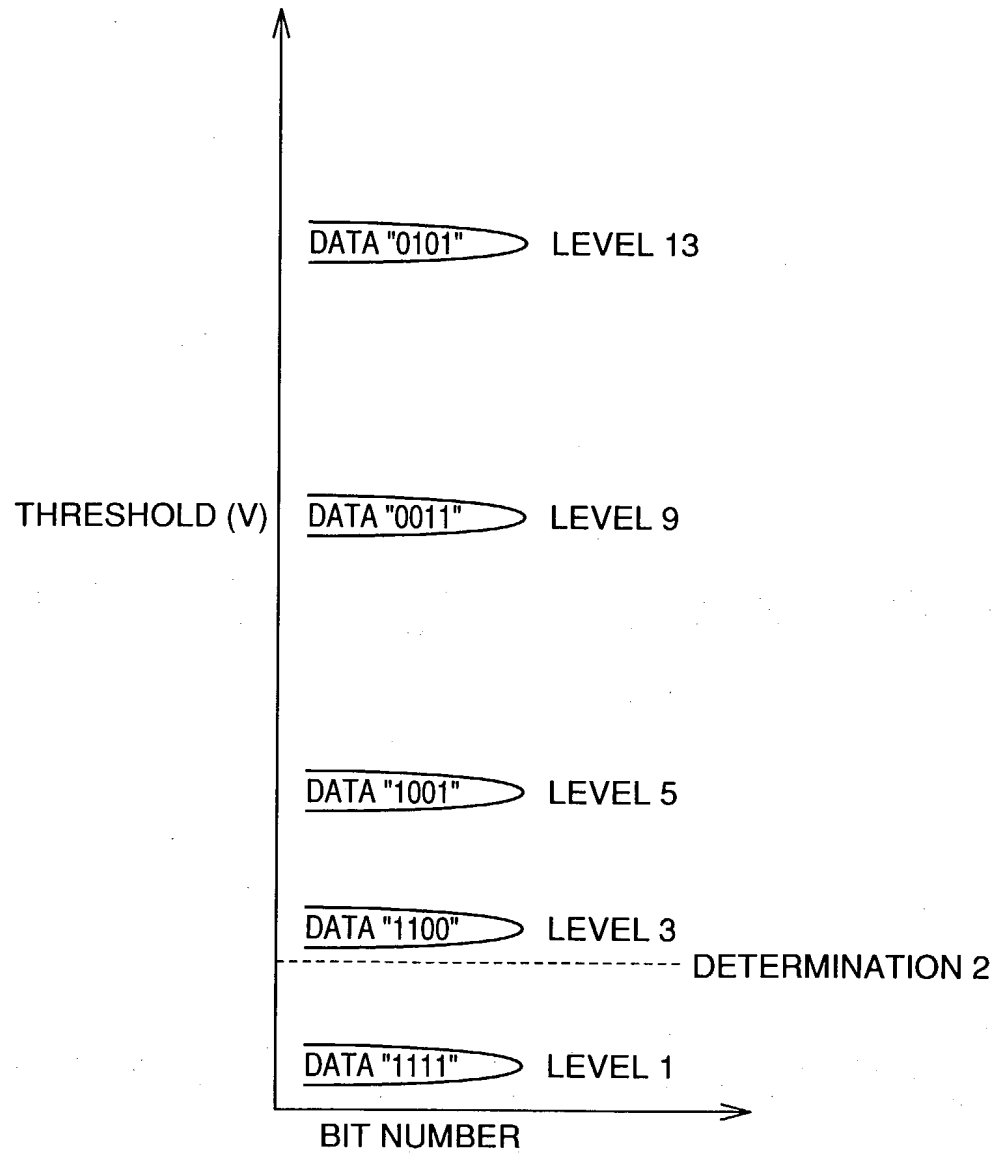




FIG.98

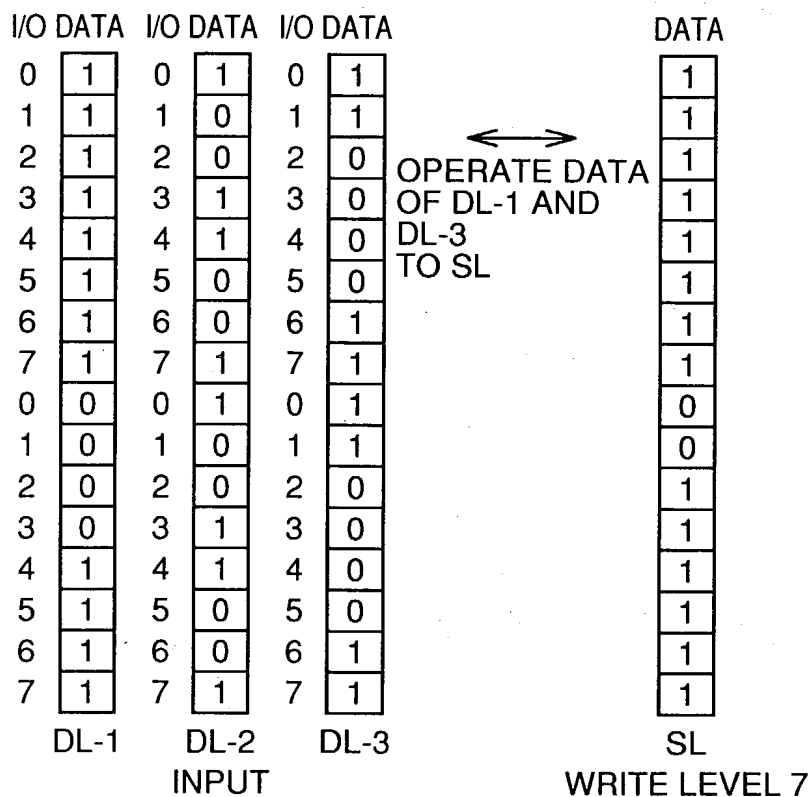




FIG.99

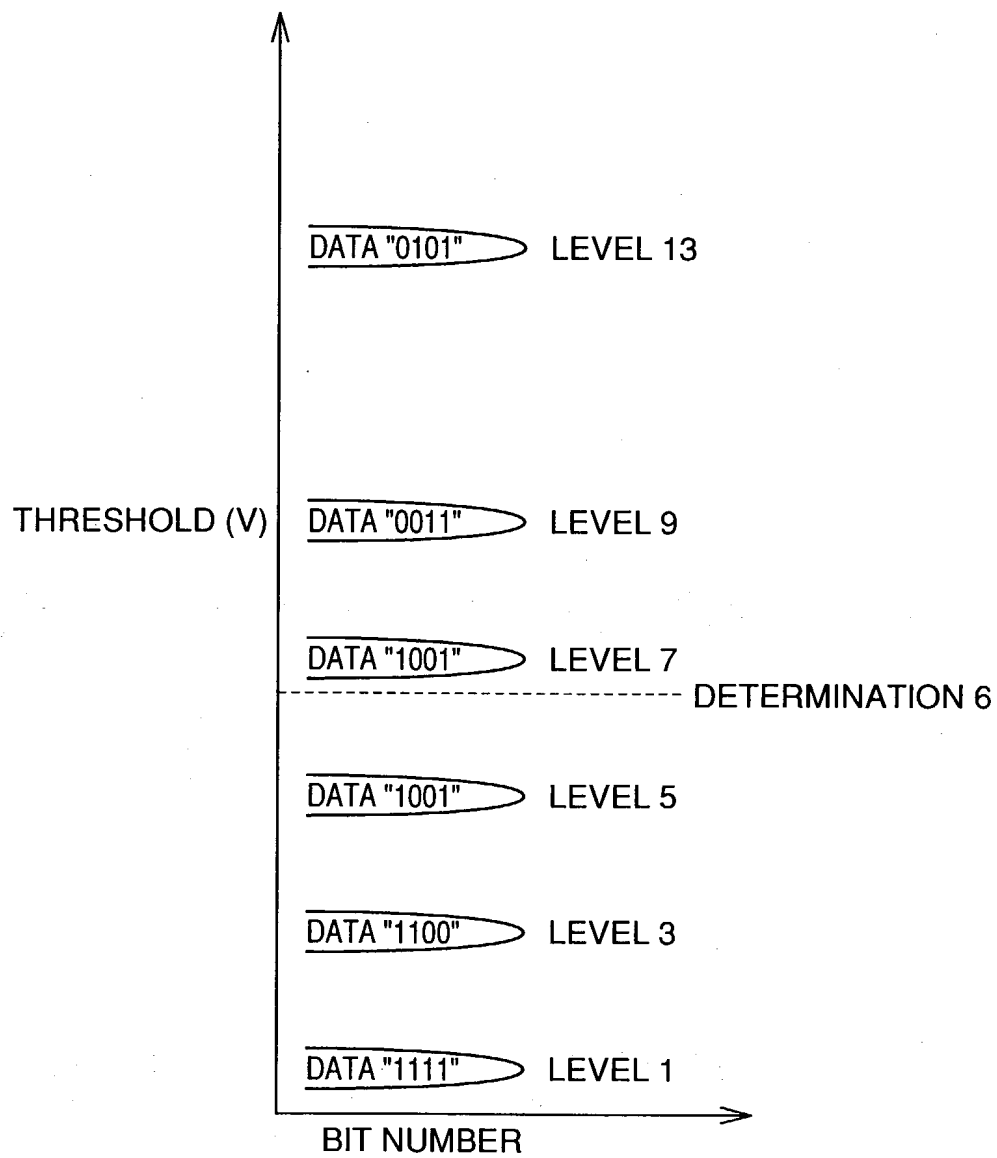
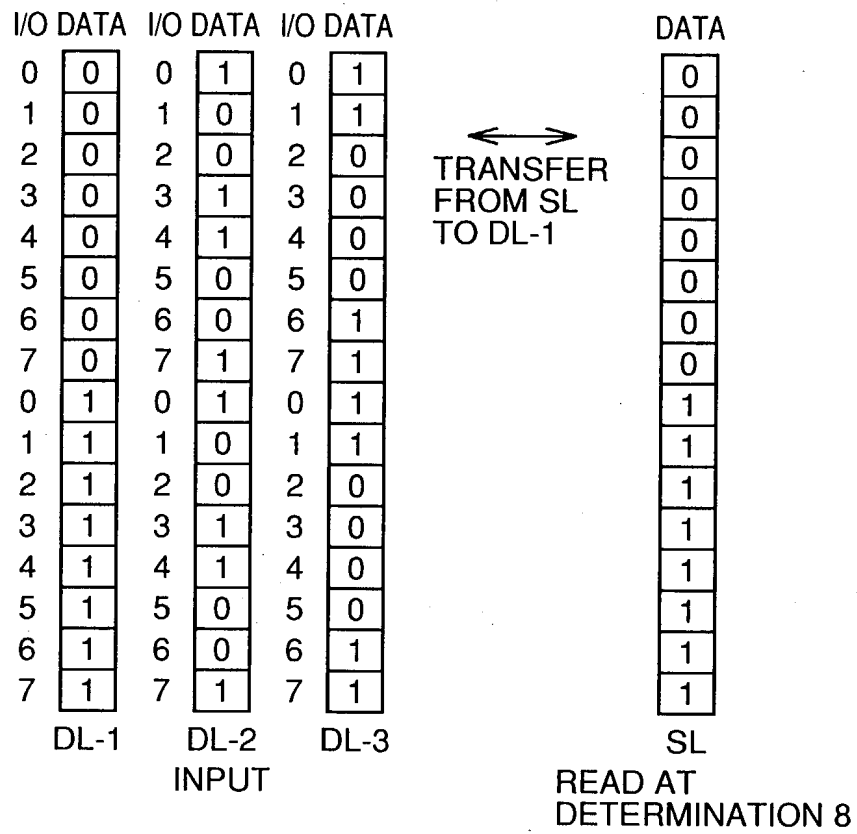


FIG. 100



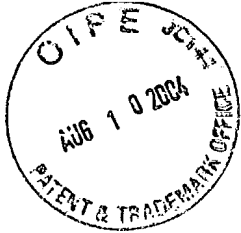


FIG.101

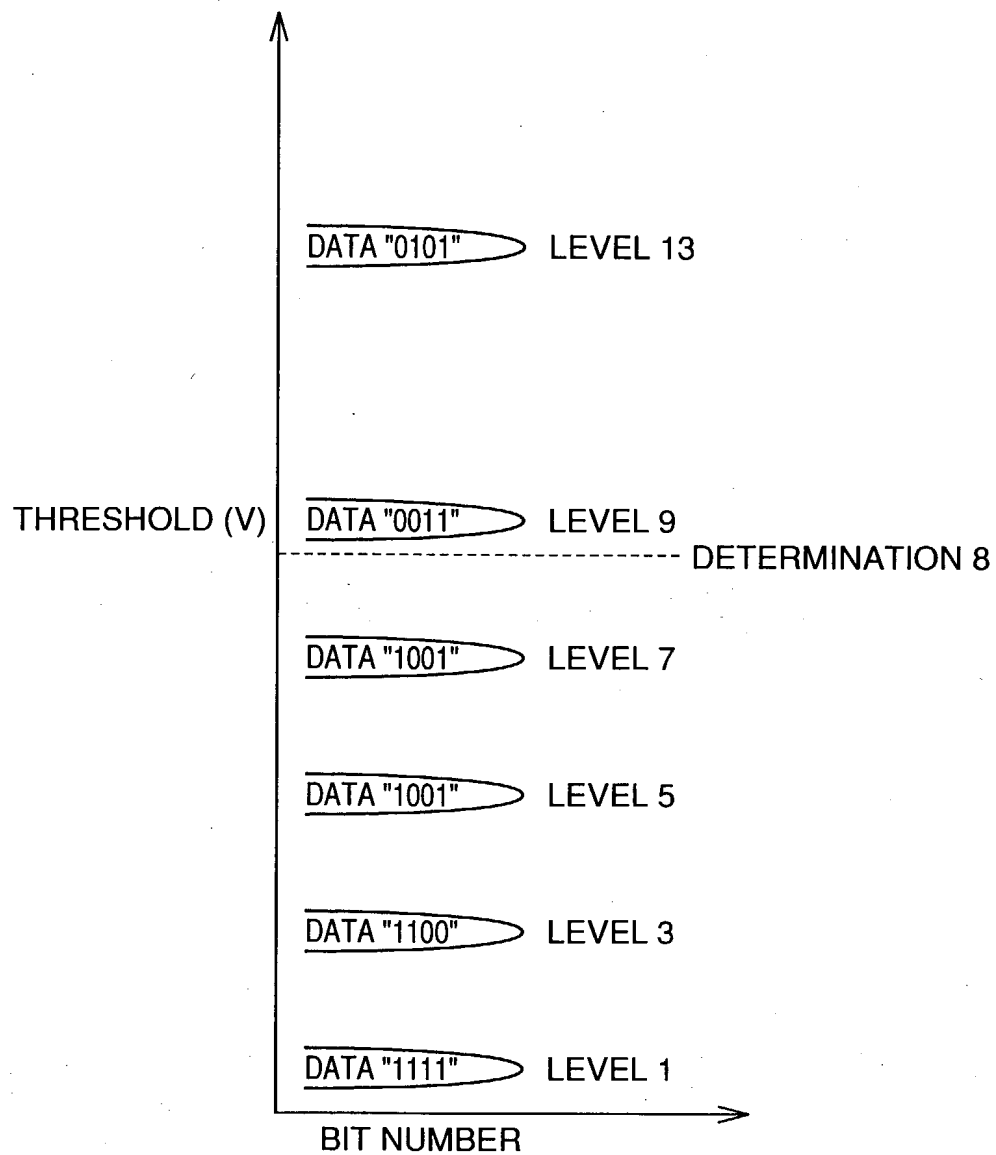


FIG. 102

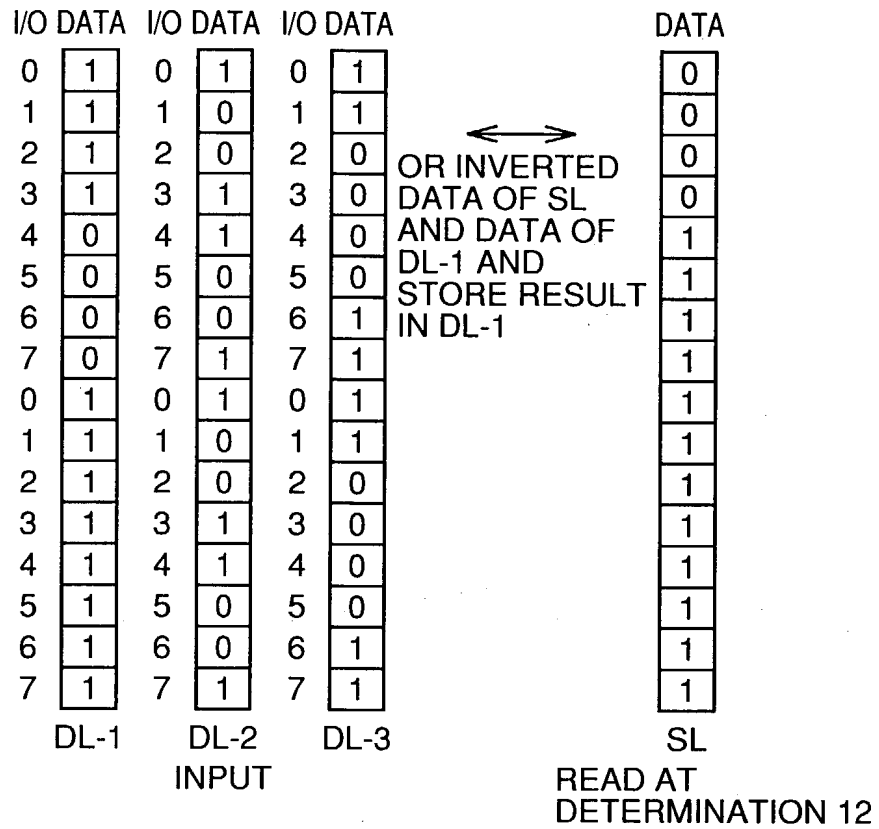


FIG. 103

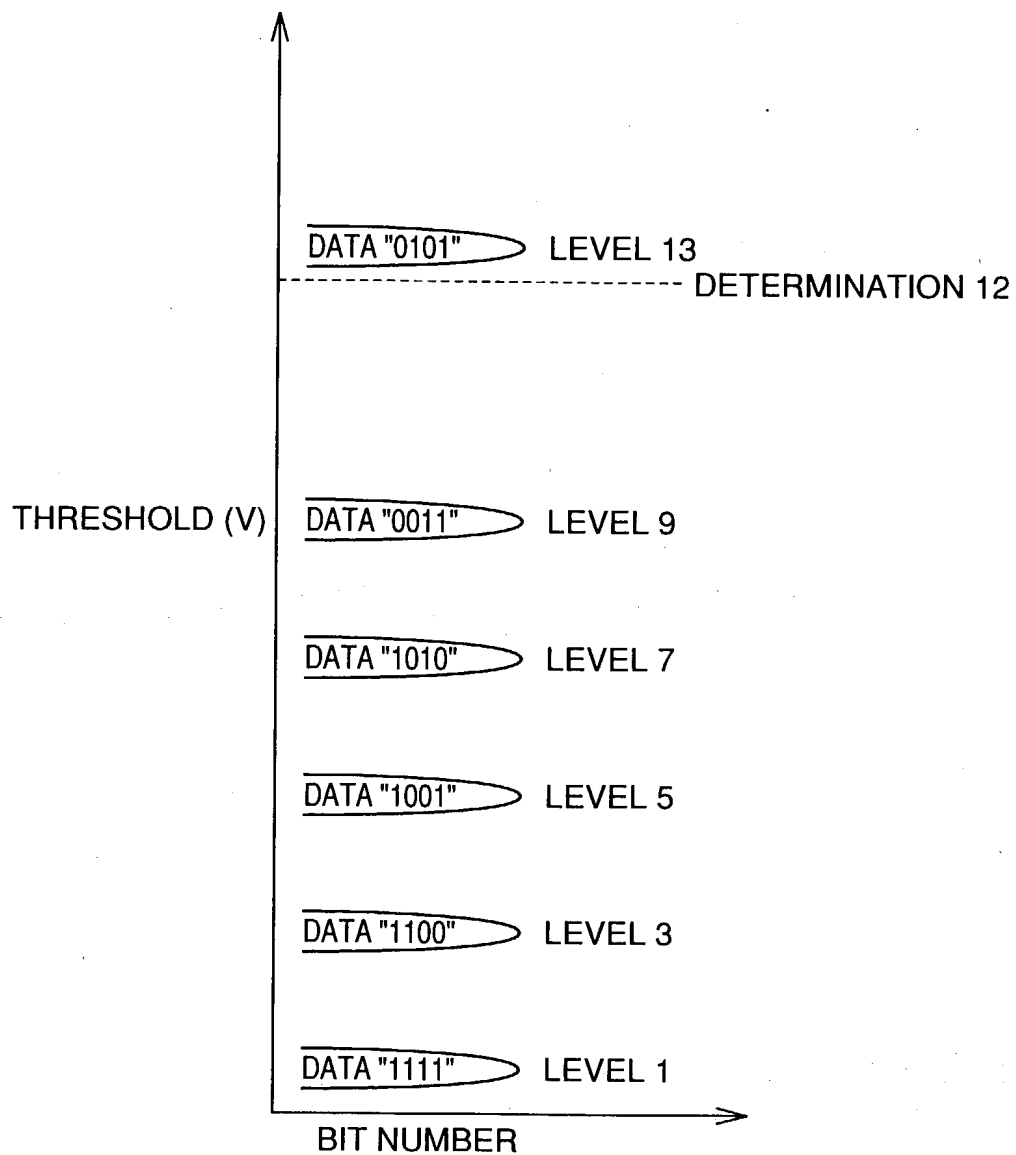
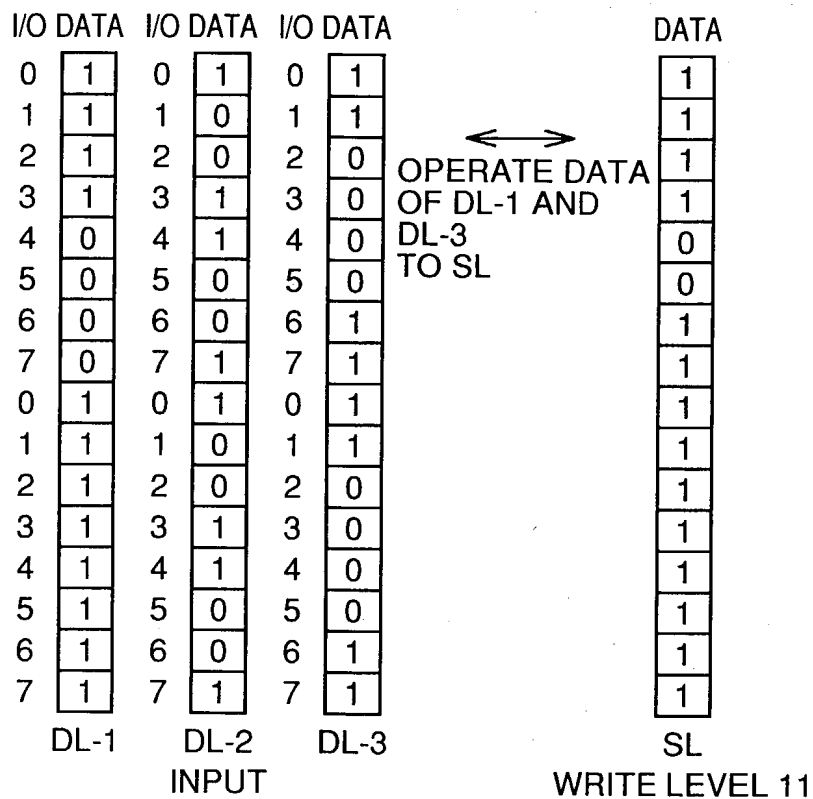


FIG. 104



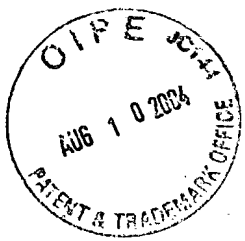


FIG. 105

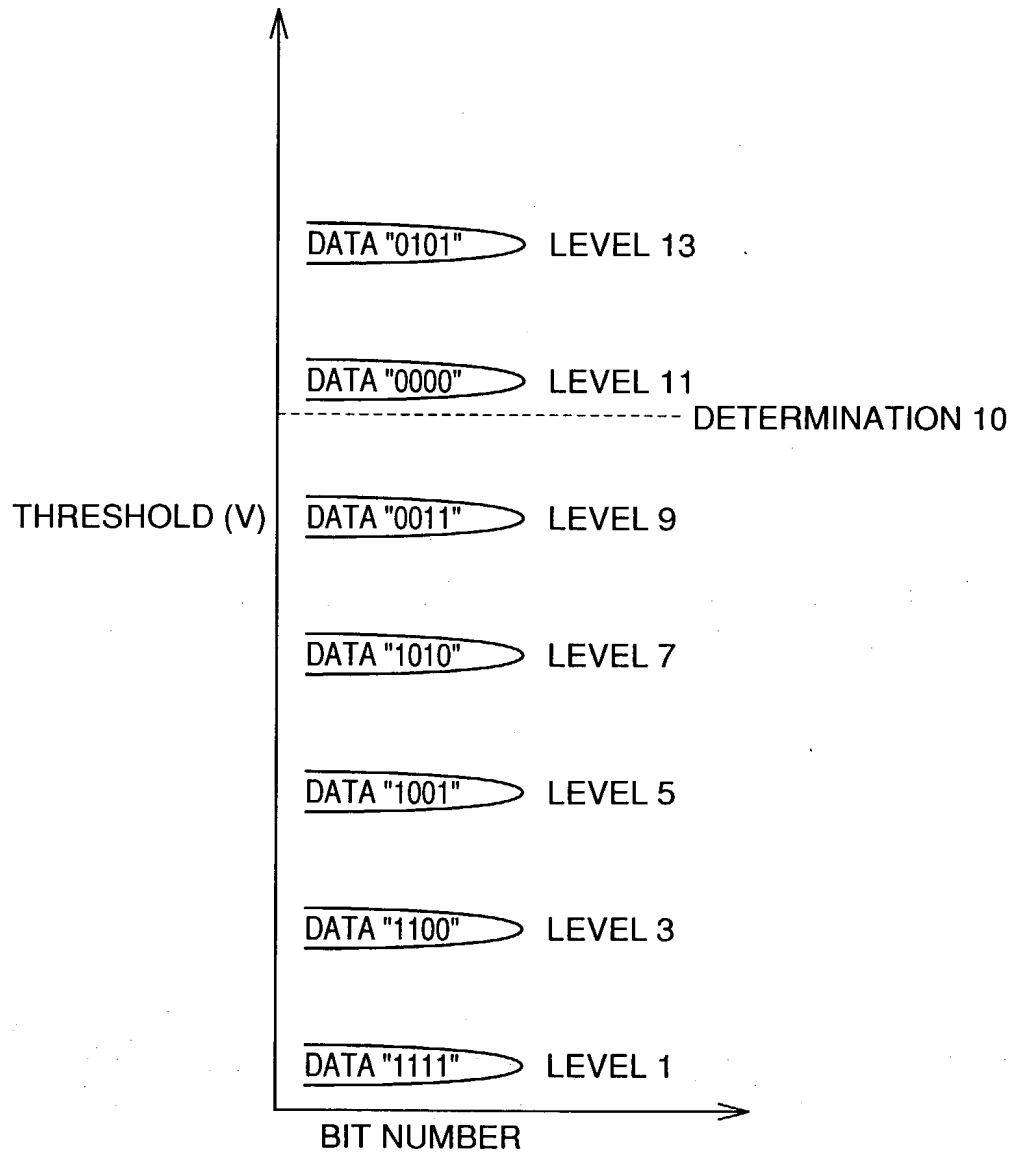




FIG. 106

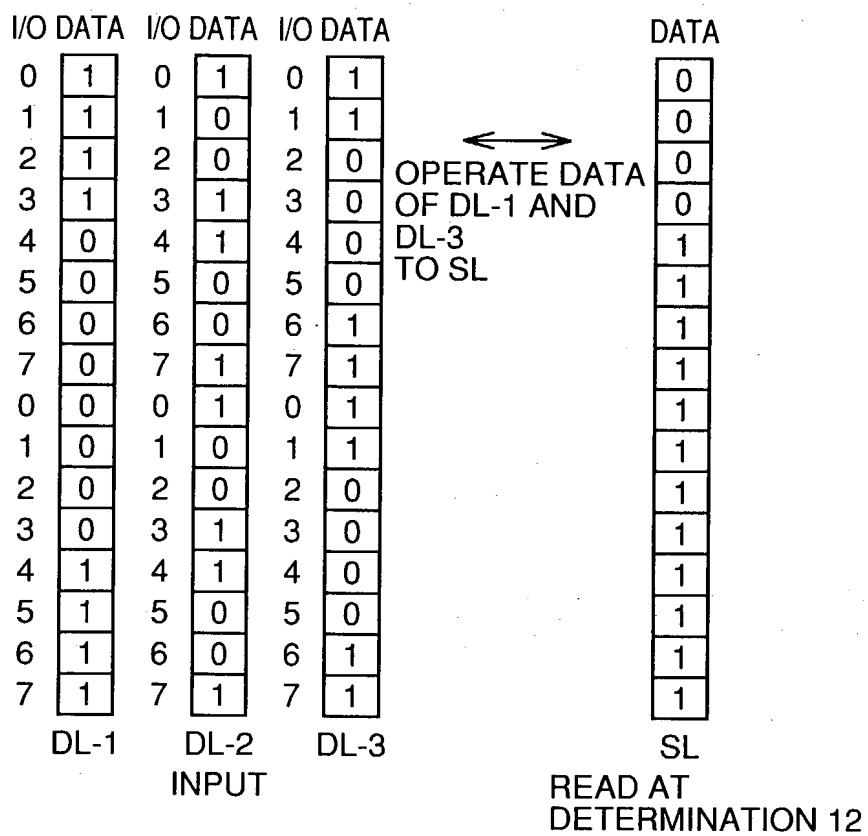




FIG.107

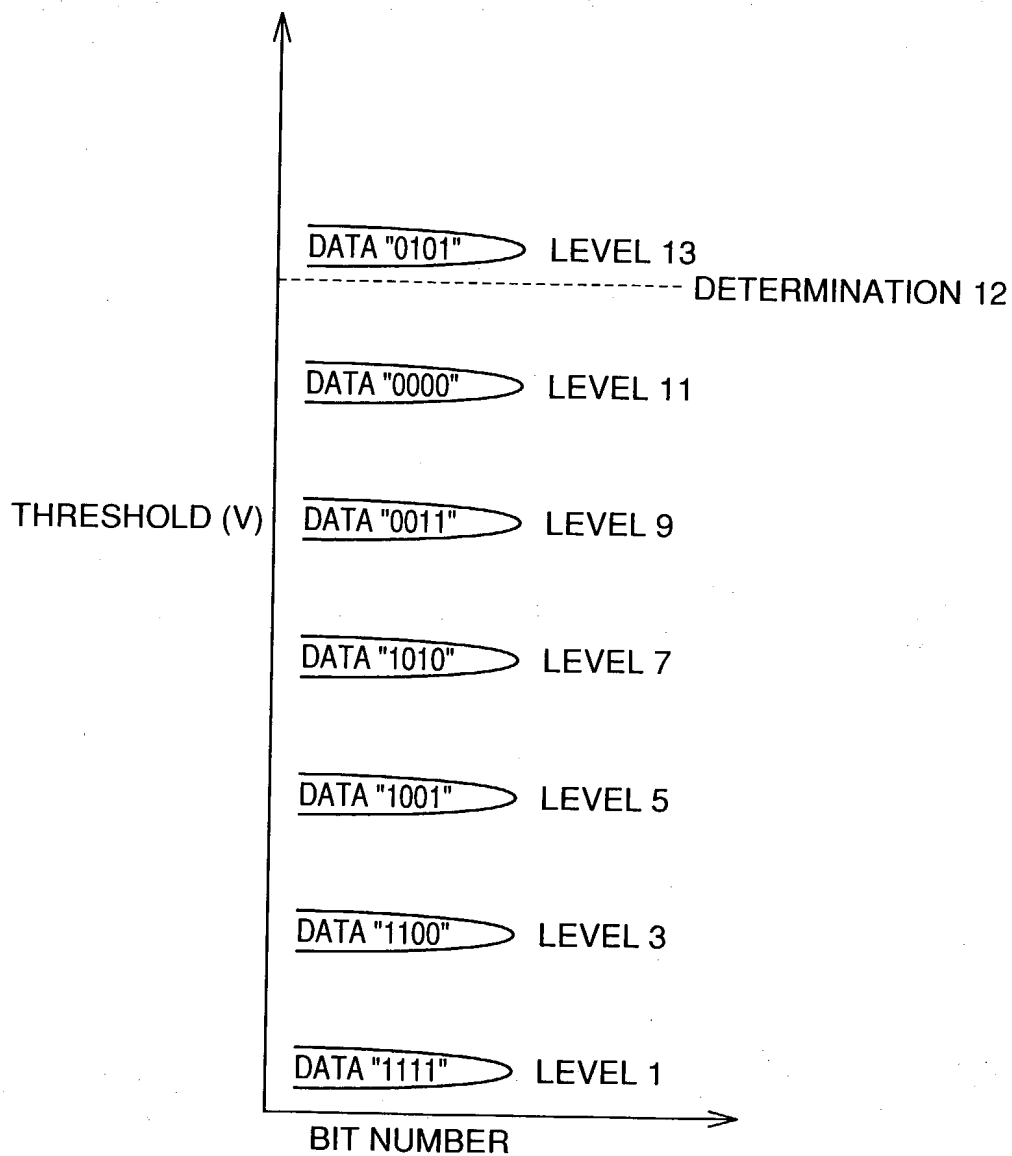


FIG.108

| I/O DATA | I/O DATA | I/O DATA |
|----------|----------|----------|
| 0        | 0        | 0        |
| 1        | 1        | 1        |
| 2        | 0        | 0        |
| 3        | 1        | 0        |
| 4        | 1        | 0        |
| 5        | 0        | 0        |
| 6        | 0        | 1        |
| 7        | 1        | 1        |
| 0        | 0        | 1        |
| 1        | 1        | 1        |
| 2        | 0        | 0        |
| 3        | 1        | 0        |
| 4        | 1        | 0        |
| 5        | 0        | 0        |
| 6        | 0        | 1        |
| 7        | 1        | 1        |
| DL-1     | DL-2     | DL-3     |
| INPUT    |          |          |

| DATA           |
|----------------|
| 0              |
| 0              |
| 1              |
| 1              |
| 1              |
| 1              |
| 1              |
| 1              |
| 1              |
| 1              |
| 1              |
| 1              |
| 1              |
| 1              |
| 1              |
| 1              |
| SL             |
| WRITE LEVEL 15 |

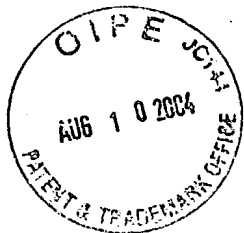


FIG. 109

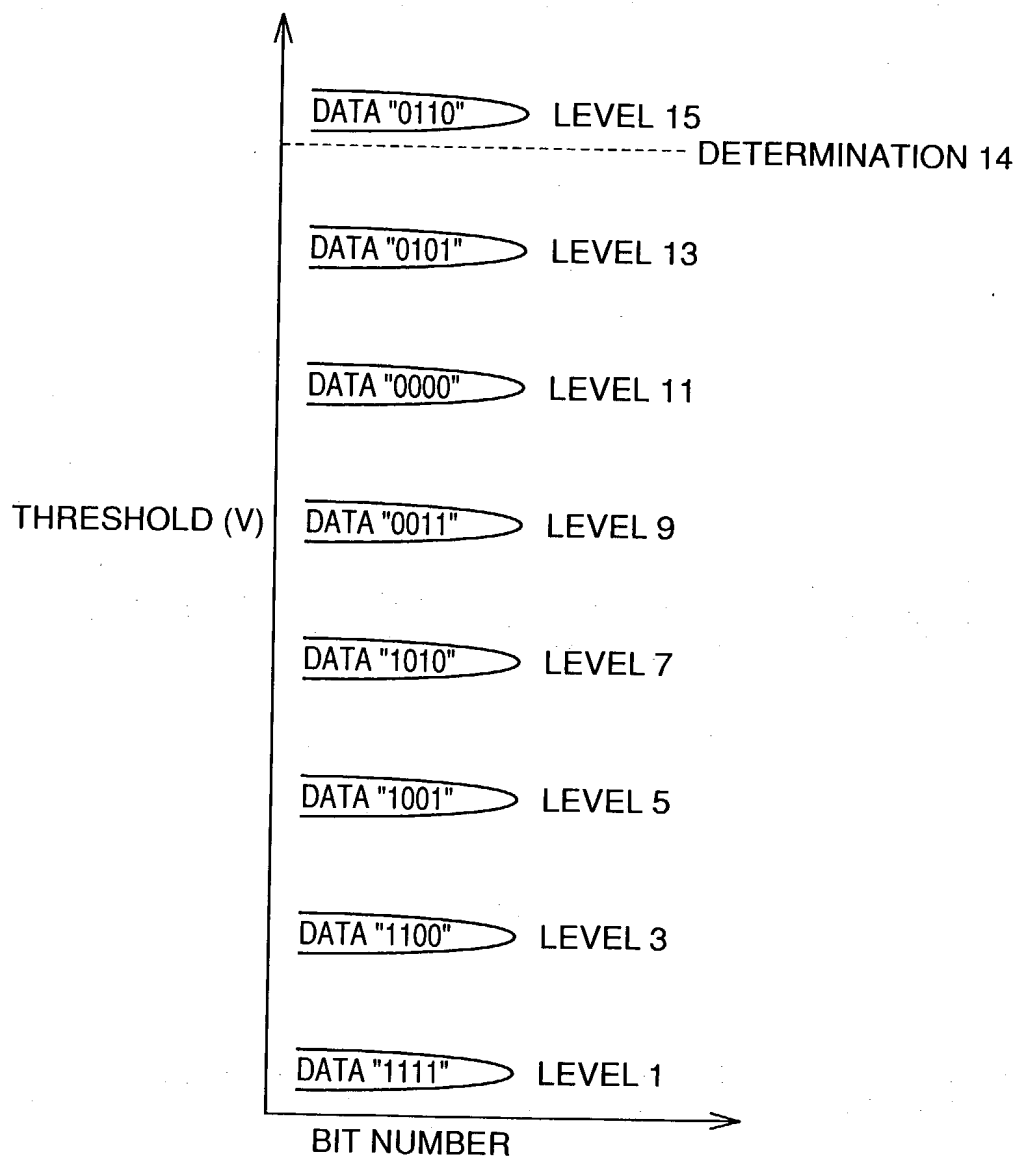




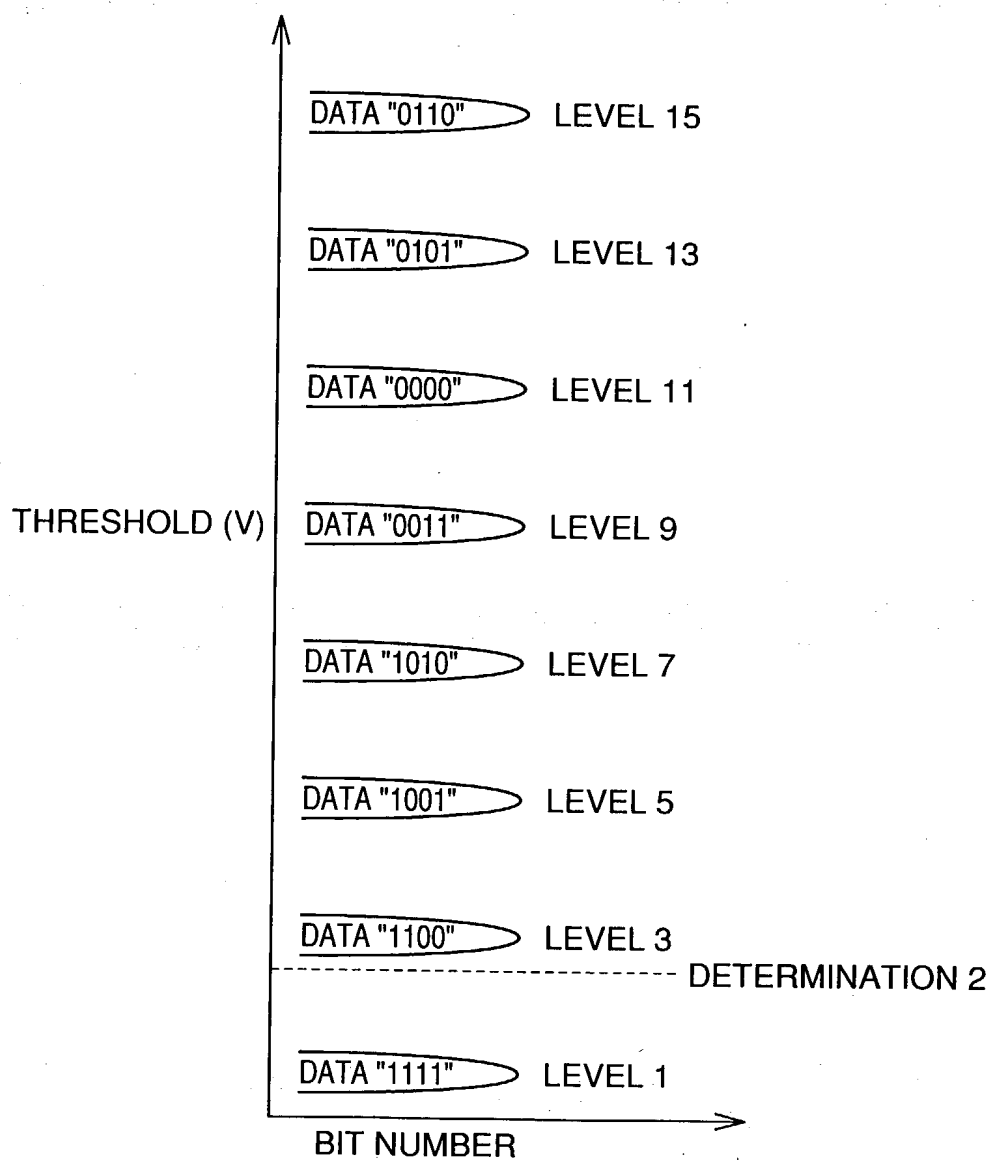
FIG.110

| I/O DATA |   | I/O DATA |   | I/O DATA |  |  | DATA |  |
|----------|---|----------|---|----------|--|--|------|--|
| 0        | 0 | 0        | 1 | 0        |  |  | 0    |  |
| 1        | 0 | 1        | 0 | 1        |  |  | 0    |  |
| 2        | 0 | 2        | 0 | 2        |  |  | 0    |  |
| 3        | 0 | 3        | 1 | 3        |  |  | 0    |  |
| 4        | 0 | 4        | 1 | 4        |  |  | 0    |  |
| 5        | 0 | 5        | 0 | 5        |  |  | 0    |  |
| 6        | 0 | 6        | 0 | 6        |  |  | 0    |  |
| 7        | 0 | 7        | 1 | 7        |  |  | 0    |  |
| 0        | 0 | 0        | 1 | 0        |  |  | 0    |  |
| 1        | 0 | 1        | 0 | 1        |  |  | 0    |  |
| 2        | 0 | 2        | 0 | 2        |  |  | 0    |  |
| 3        | 0 | 3        | 1 | 3        |  |  | 0    |  |
| 4        | 0 | 4        | 1 | 4        |  |  | 0    |  |
| 5        | 0 | 5        | 0 | 5        |  |  | 0    |  |
| 6        | 1 | 6        | 0 | 6        |  |  | 1    |  |
| 7        | 1 | 7        | 1 | 7        |  |  | 1    |  |
| DL-1     |   | DL-2     |   | DL-3     |  |  | SL   |  |

↔  
TRANSFER  
FROM SL  
TO DL-1  
OPERATE  
DATA OF SL  
AND DL-2  
TO SL

READ AT  
DETERMINATION 2

FIG.111



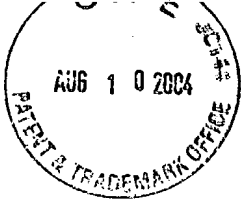


FIG. 112

| I/O DATA |   | I/O DATA |   | I/O DATA |  |
|----------|---|----------|---|----------|--|
| 0        | 0 | 0        | 1 | 0        |  |
| 1        | 0 | 1        | 0 | 1        |  |
| 2        | 0 | 2        | 0 | 2        |  |
| 3        | 0 | 3        | 1 | 3        |  |
| 4        | 0 | 4        | 1 | 4        |  |
| 5        | 0 | 5        | 0 | 5        |  |
| 6        | 0 | 6        | 0 | 6        |  |
| 7        | 0 | 7        | 1 | 7        |  |
| 0        | 0 | 0        | 1 | 0        |  |
| 1        | 0 | 1        | 0 | 1        |  |
| 2        | 0 | 2        | 0 | 2        |  |
| 3        | 0 | 3        | 1 | 3        |  |
| 4        | 0 | 4        | 1 | 4        |  |
| 5        | 0 | 5        | 0 | 5        |  |
| 6        | 1 | 6        | 0 | 6        |  |
| 7        | 1 | 7        | 1 | 7        |  |
| DL-1     |   | DL-2     |   | DL-3     |  |

| DATA          |   |
|---------------|---|
|               | 1 |
|               | 1 |
|               | 1 |
|               | 1 |
|               | 1 |
|               | 1 |
|               | 1 |
|               | 1 |
|               | 1 |
|               | 1 |
|               | 1 |
|               | 1 |
|               | 1 |
|               | 1 |
|               | 0 |
|               | 1 |
| SL            |   |
| WRITE LEVEL 2 |   |



FIG.113

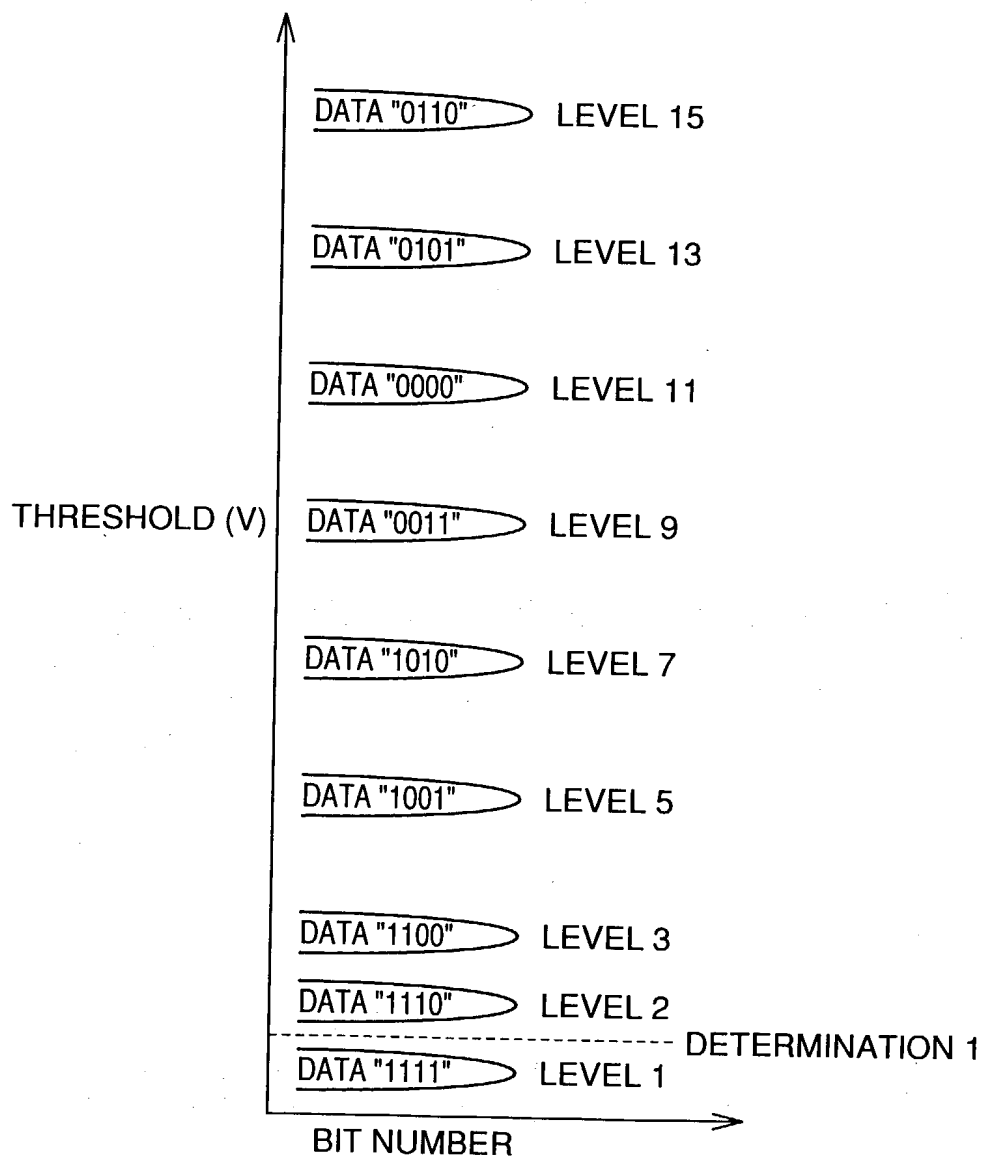






FIG.114

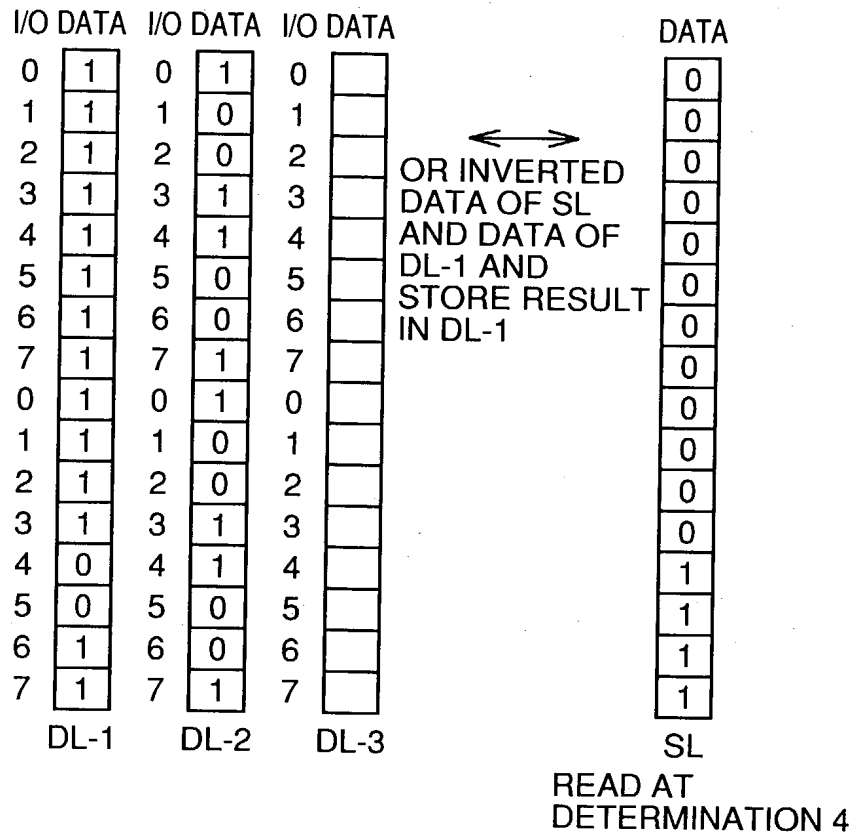


FIG. 115

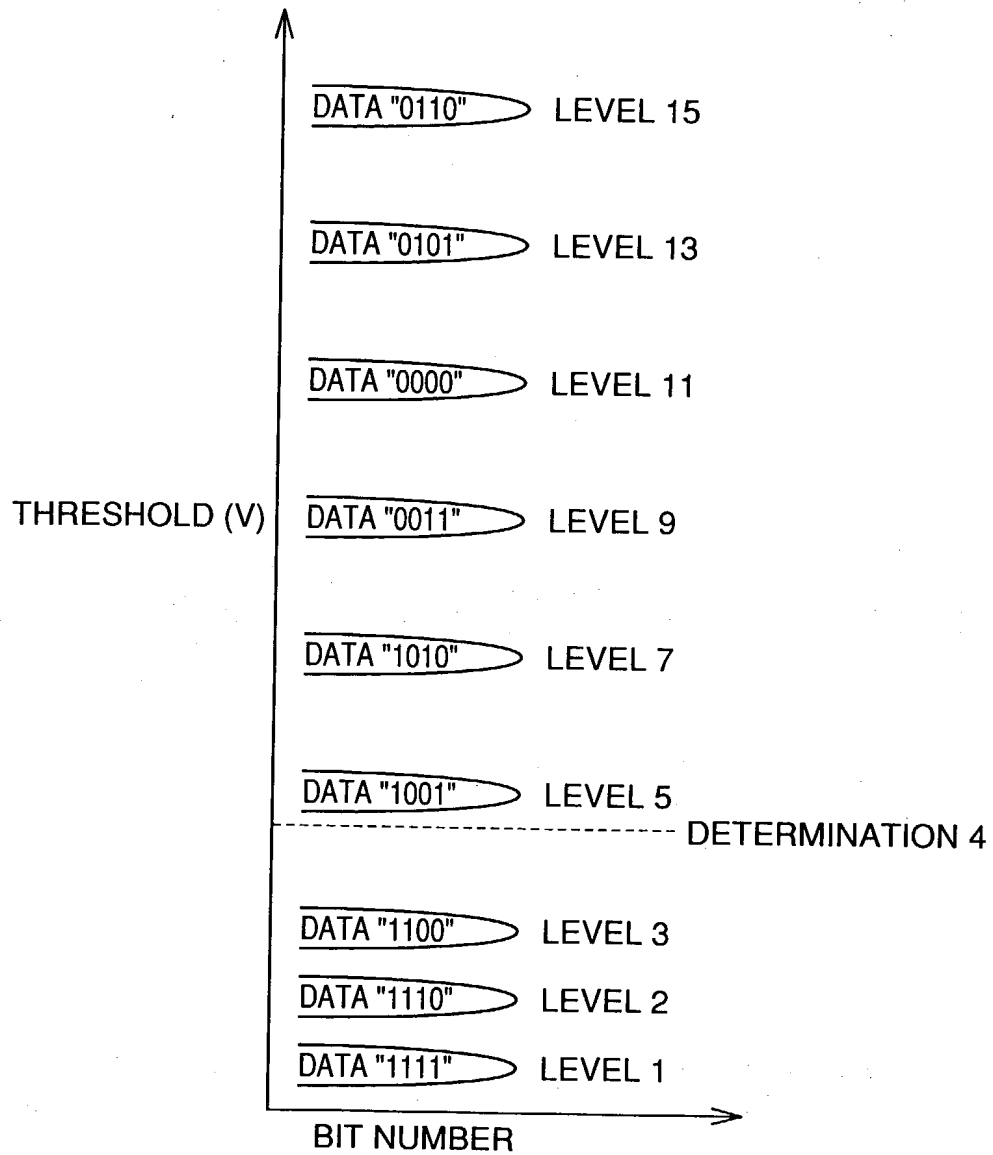




FIG. 116

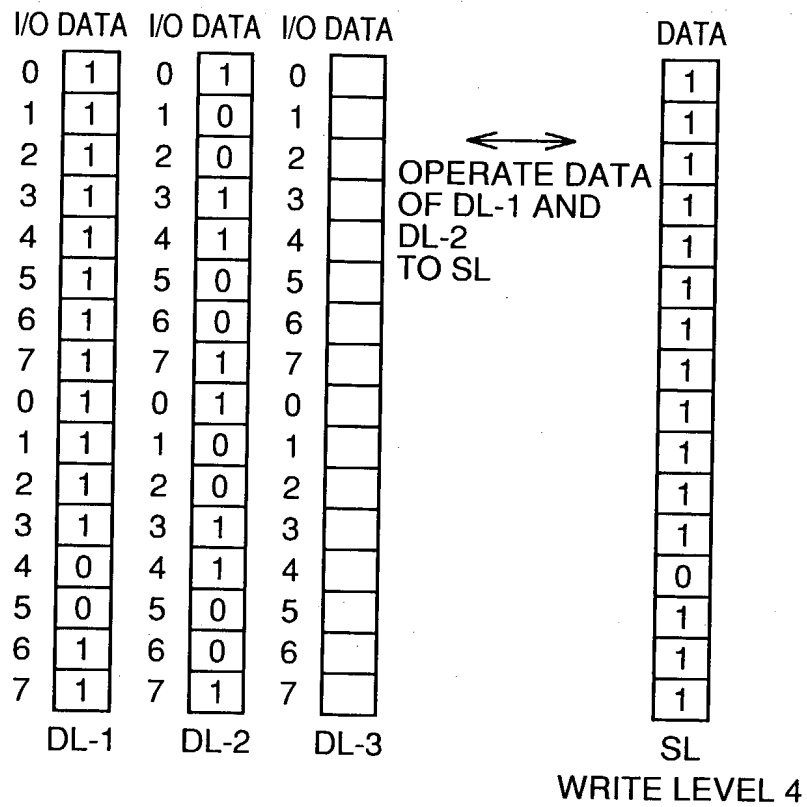




FIG.117

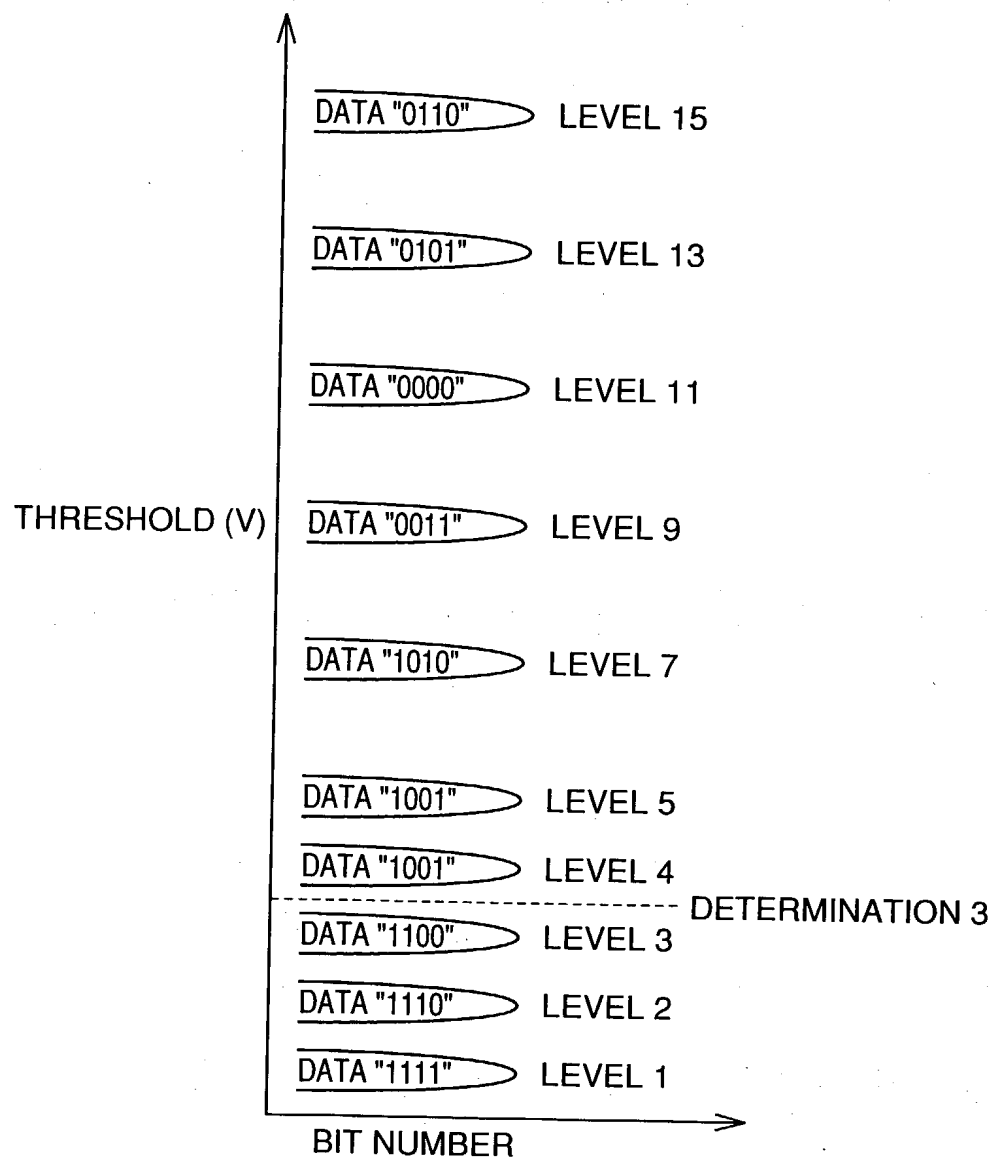
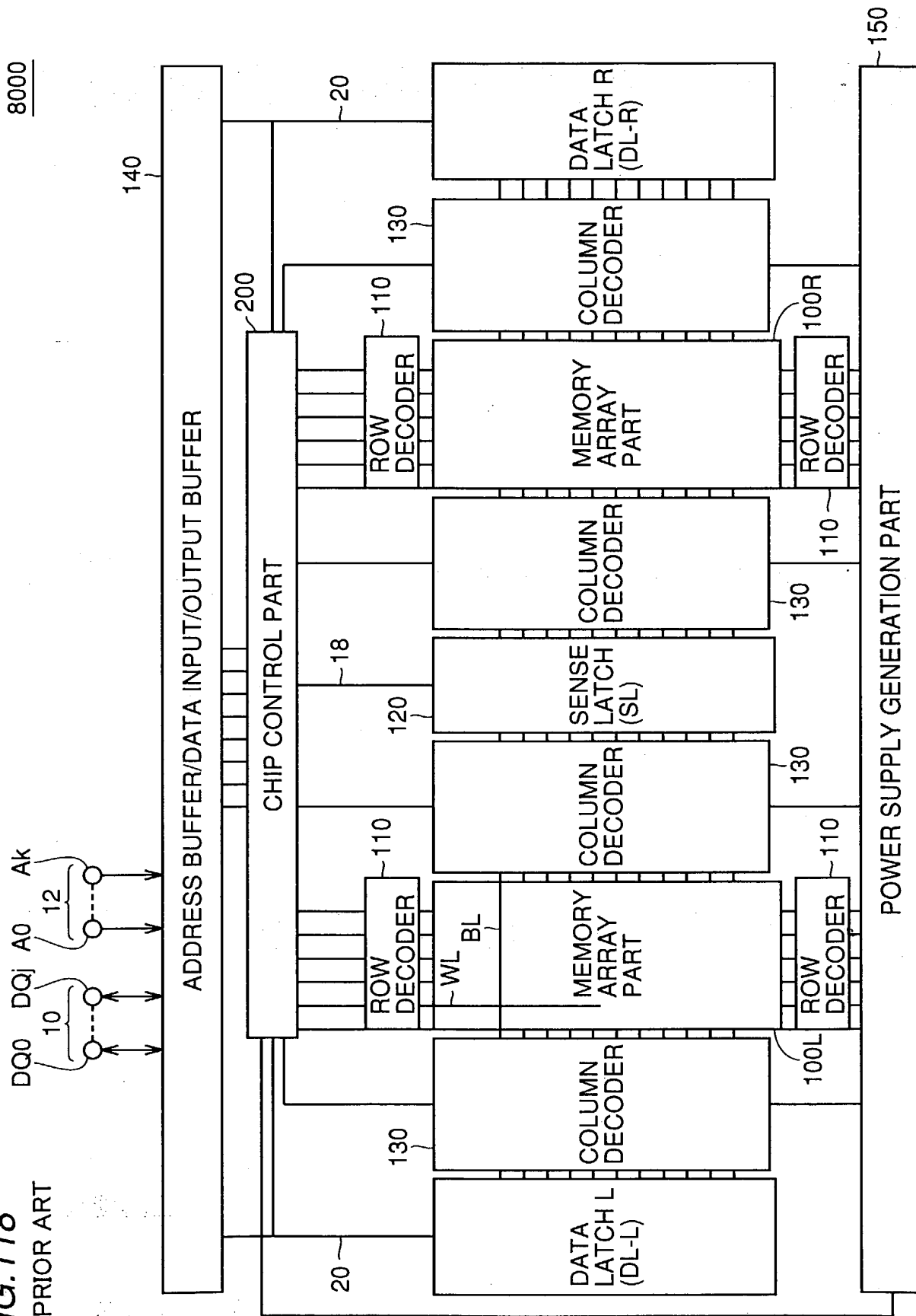


FIG. 118

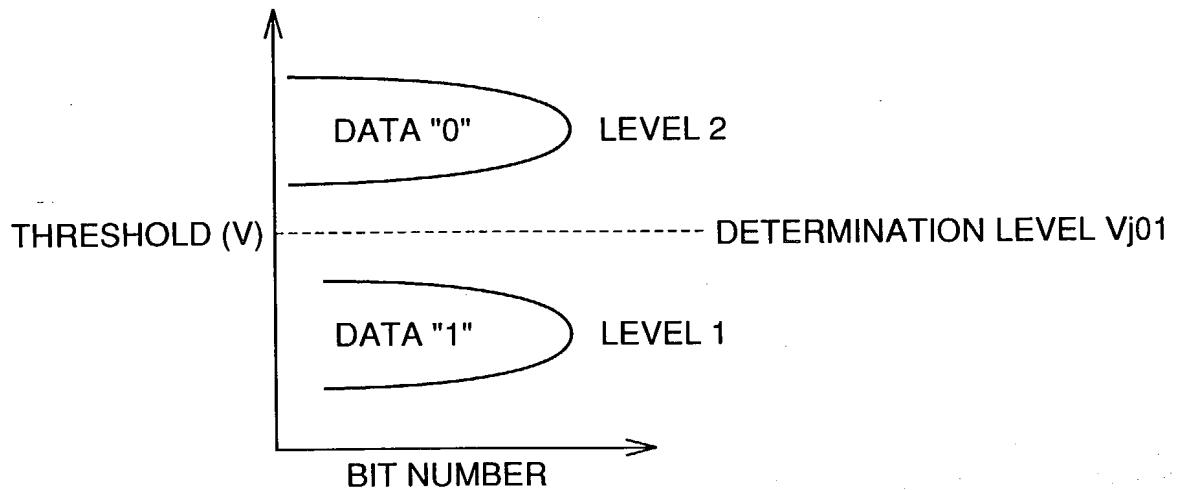
PRIOR ART

8000

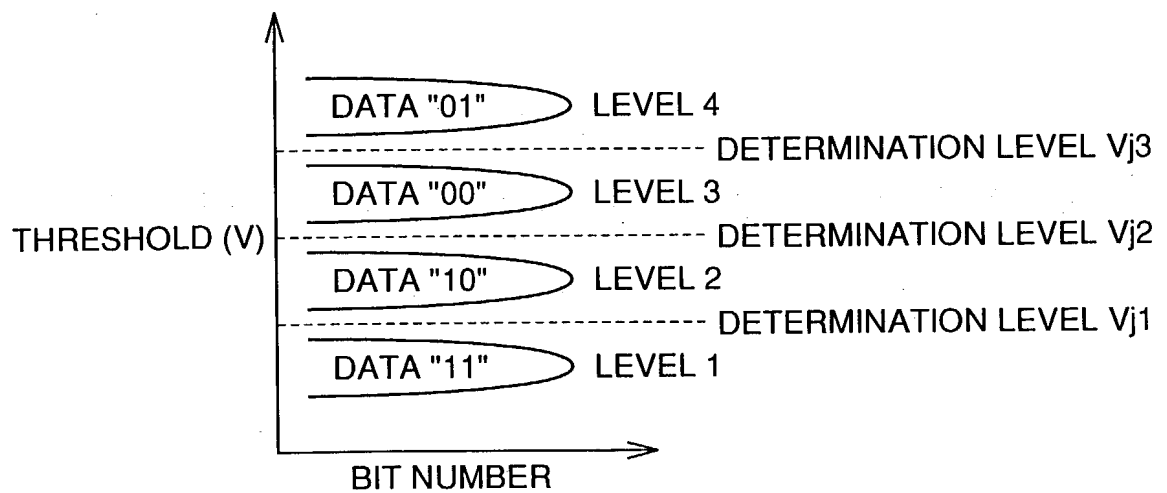




**FIG.119** PRIOR ART

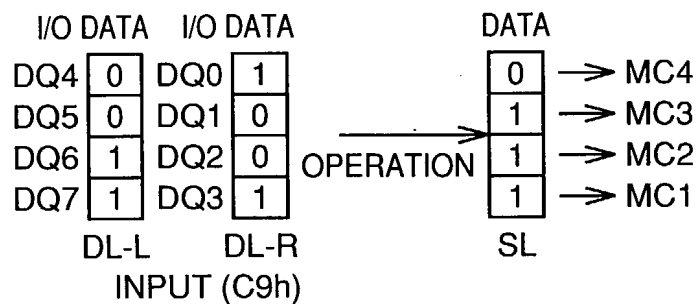


**FIG.120** PRIOR ART

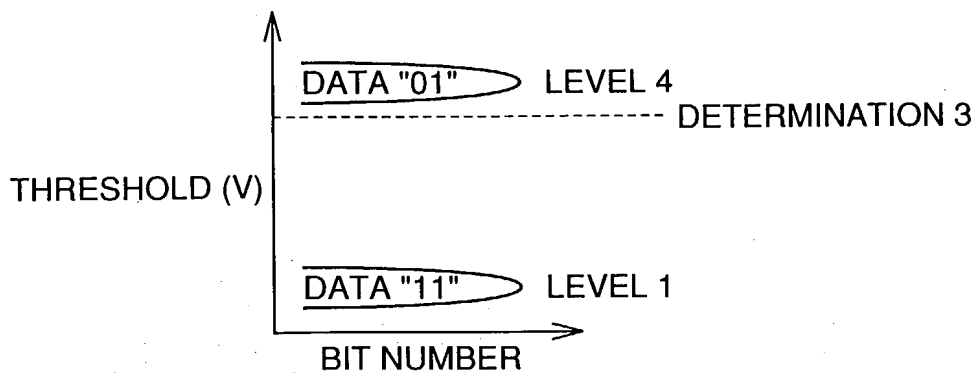




**FIG.121** PRIOR ART

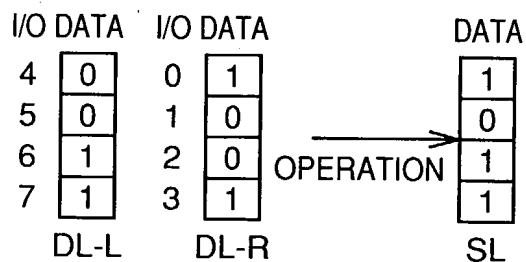


**FIG.122** PRIOR ART

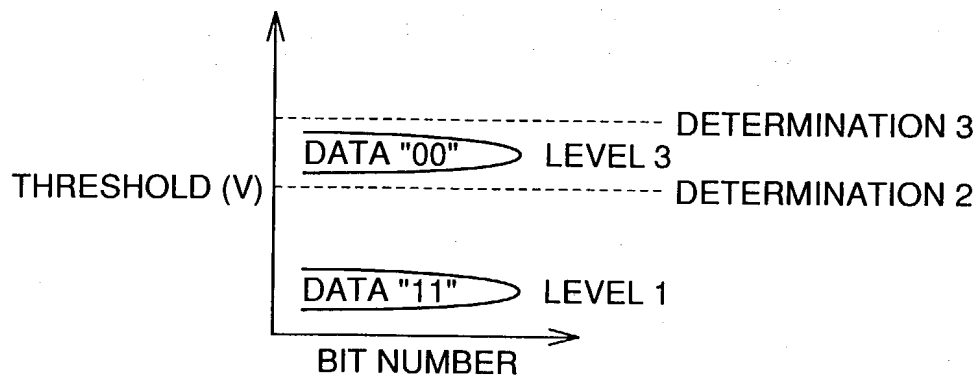




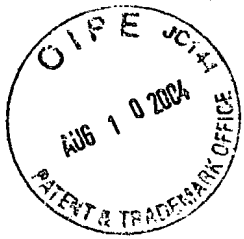
**FIG.123** PRIOR ART



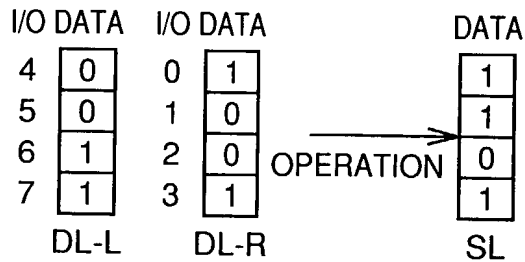
**FIG.124** PRIOR ART



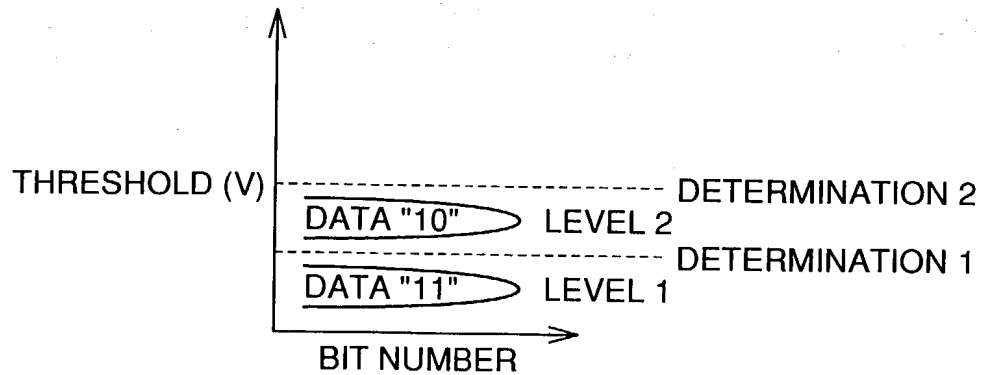




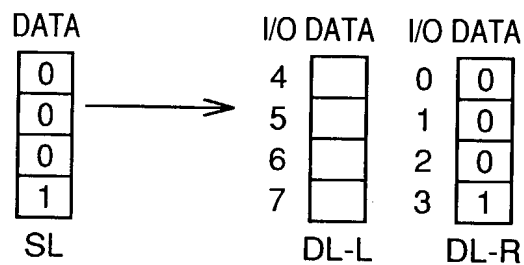
**FIG.125** PRIOR ART



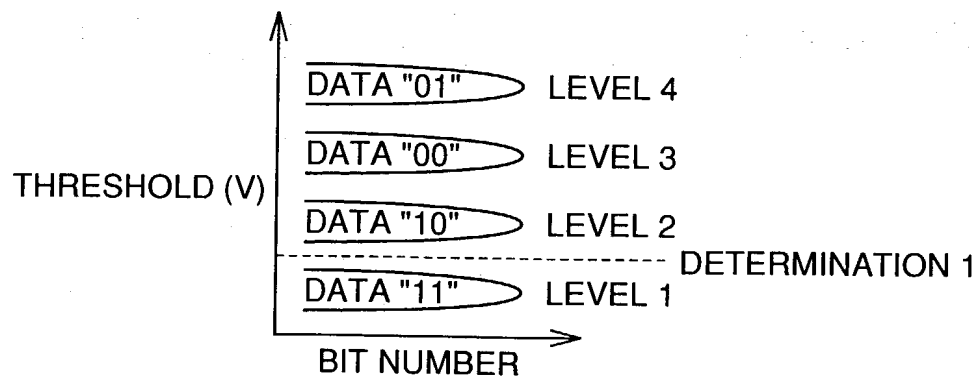
**FIG.126** PRIOR ART



**FIG. 127** PRIOR ART

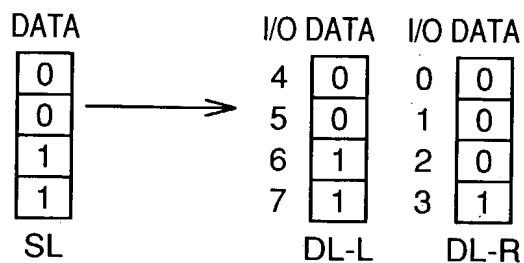


**FIG. 128** PRIOR ART

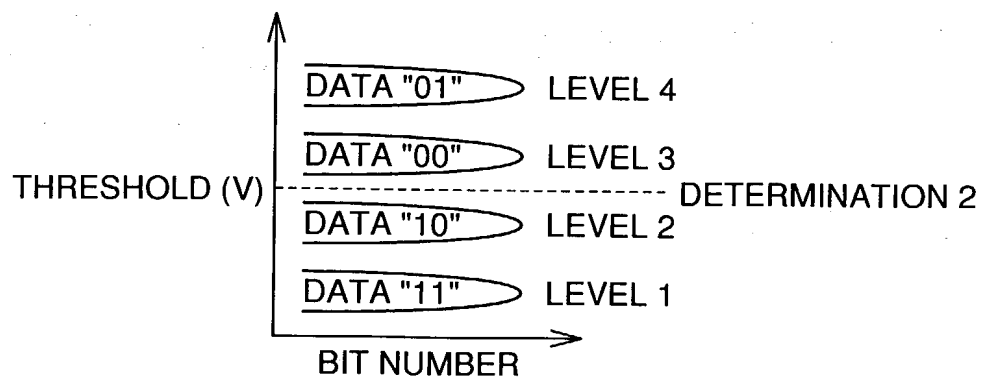




**FIG. 129** PRIOR ART

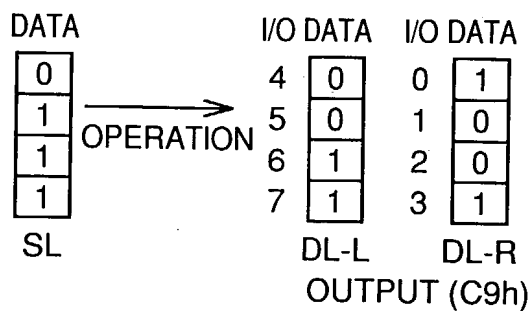


**FIG. 130** PRIOR ART





**FIG.131** PRIOR ART



**FIG.132** PRIOR ART

